Muscliff Primary School Science Progression Map

Year 1

Term	Unit	Knowledge	Key Vocabulary	Working scientifically skills and vocabulary
Autumn 1	Animals including humans	- identify, name, draw and label the basic parts of the human body (hand, arm, leg, head etc) and say which part of the body is associated with each sense.	Head, leg, arms, hand, teeth, mouth, taste, touch, smell, sight, hearing	**<u>Working scientifically skills</u>** - Ask simple questions about the world around them (may be guided) and begin to recognise they can be answered in different ways. - Begin to observe closely using simple equipment. - Observe simple changes over time and, with guidance, begin to notice patterns and relationships. - Use simple observations and ideas to suggest answers to questions with help. - Begin to perform simple tests with support. - Use simple measurements and equipment with support and know how to use them safely. - Identify and classify with support. - Begin to use simple features to compare objects, materials and living things and, with help, decide how to sort and group them. - Gather and record data in a range of ways with some adult support, to help in answering questions. - Show results in a simple table that a teacher has provided. - Begin to talk about what they have found out and how they found it out. **<u>Working scientifically vocabulary</u>** Question, answer, observe, equipment, identify, group, compare, record, table, test, measure, classify, biology, chemistry, physics
Autumn 2	Everyday materials	- 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.	Wood, plastic, paper, glass, metal, brick, rock, water, hard, soft, stretchy, stiff, shiny, dull, rough, smooth, waterproof, absorbent, bendy	
Autumn 2	Seasonal changes	- observe changes across the four seasons - observe and describe weather associated with the seasons and how day length varies.	Summer, Winter, Autumn, Spring, day, night, wind, rain, sun, snow, hail, sleet, fog, hot, warm, cold	
Spring 1	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,	Fish, amphibians, reptiles, mammals, birds, pets, carnivore, herbivore, omnivore, meat, plants	

		reptiles, birds and mammals, including pets)		
Spring 2	Animals including humans	- notice that animals, including humans, have offspring which grow into adults	Offspring, grow, egg, chick, chicken	
Summer 1 & 2	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.	Wild plant, garden plant, deciduous, evergreen, trunk, branches, leaf, root, bud, flower, blossom, petals, stem, fruit, vegetables, seed, bulb	
Year 2				
Term	**Unit**	**Knowledge**	**Key Vocabulary**	**Working scientifically skillsand vocabulary**
Autumn and Spring	Everyday materials	- 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.	Squashing, bending, twisting, stretching, wood, metal, plastic, glass, brick, rock, paper, cardboard, Charles Mackintosh – waterproof fabric etc.	**<u>Working scientifically skills</u>** - Ask simple questions about the world around them and recognise they can be answered in different ways. - Observe closely using simple equipment. - Observe changes over time and, with guidance, begin to notice patterns and relationships - Use simple observations and ideas to suggest answers to questions. - Perform simple tests. - Use simple measurements and equipment with increasing independence and know how to use them safely. - Identify and classify. - Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them - Gather and record data in a range of ways to help in answering questions. - Show results in a table that a teacher has provided. - Talk about what they have found out and how they found it out.
Autumn and Spring	Living things and their habitats	- 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 micro-	Living, dead, habitat, microhabitat, food chain, human, healthy, seashore, woodland, ocean, rainforest, conditions, water, food, air, shelter	

		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.		**Working scientifically vocabulary** Question, answer, observe, equipment, identify, group, compare, contrast, record, table, diagram, chart, map, data, test, measure, classify, biology, chemistry, physics
Spring 2	Plants	- 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.	Seed, bulbs, water, light, suitable temperature, grow, healthy, germination, reproduction	
Summer 1	Animals including humans	- notice that animals, including humans, have offspring which grow into adults - find out about and describe the basic needs of animals, including humans, for survival (water, food and air) - describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	Adult, teenager, baby, toddler, child, offspring, grow, egg, chick, chicken, reproduce, nutrition, hygiene	

Year 3

Term	Unit	Knowledge	Key Vocabulary	Working scientifically skillsand vocabulary
Autumn 2	Animals including humans	- 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 - 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 - identify that humans and some other animals have skeletons and	Nutrition, carbohydrates, fats, protein, dairy, water, vitamins, minerals, bones, joints, endoskeleton, exoskeleton, hydrostatic, skeleton vertebrae, invertebrate, contract, relax, muscles, canine, incisor, molar, mouth, oesophagus, stomach, small intestine, large intestine, acid, enzymes, digestion	**Working scientifically skills** - Ask questions and begin to use different types of scientific enquiries to answer them. - Begin to make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. - Begin to look for naturally occurring patterns and relationships and, with help, decide what data to collect to identify them. - Begin to observe and measure accurately using standard units including time in minutes and seconds.

		muscles for support, protection and movement.		- Set up some simple practical enquiries, comparative and fair tests. - Begin to recognise when a simple fair test is necessary and help to decide how to set it up. - Begin to think of more than one variable factor - Begin to identify differences, similarities or changes related to simple scientific ideas and processes. - Begin to talk about criteria for grouping, sorting and classifying and use simple keys - Gather, record, and begin to classify and present data in a variety of ways to help in answering questions. - Begin to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables - Begin to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. - Begin to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. - Begin to use straightforward scientific evidence to answer questions or to support their findings. **<u>Working scientifically vocabulary</u>** Research, scientific enquiry, fair test, observation, accurate, measurements, thermometer, data logger, gather, record, classify, present, diagrams, keys, bar chart, tables, conclusion, prediction, method, differences, similarities, evidence, improvements, patterns, relationships
		- construct and interpret a variety of food chains, identifying producers, predators and prey. - describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Producers, predators, prey, consumers, energy, transfer, mammal, amphibian, insect, bird, reproduction, egg, carnivore, herbivore, omnivore	
Spring 1	Plants	- 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.	Structure, flowering plants, roots, stem/trunk, leaves, flowers, function, nutrition, support, reproduction, growth air, light, water, nutrients, fertiliser, life cycle, pollination, seed, formation, seed dispersal	
Spring 2	Rocks, soils and fossils	- 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.	Appearance, physical properties, hard/soft, shiny/dull, rough/smooth, absorbent, fossils, sedimentary, rocks, soils, organic matter, crystals	
Summer 1	Forces and magnets	- compare how things move on different surfaces - notice that some forces need contact between two objects, but magnetic forces can act at a distance - observe how magnets attract or repel each other and attract some	Force, push, pull, surface, magnet, magnetic, attract, repel, magnetic poles, North, South	

		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 two poles - predict whether two magnets will attract or repel each other, depending on which poles are facing		

Year 4

Term	Unit	Knowledge	Key vocabulary	Working scientifically skillsand vocabulary
Autumn 1	Living things and their habitats	- describe the life process of reproduction in some plants and animals. - 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.	Environment, flowering, non-flowering, vertebrate, environment, danger, deforestation, population, litter, development, vertebrae, invertebrate, Reproduction, sexual, asexual,	**<u>Working scientifically skills</u>** - Ask relevant questions and use different types of scientific enquiries to answer them. - Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. - Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them. - Can observe and measure accurately using standard units including time in minutes and seconds. - Set up simple practical enquiries, comparative and fair tests. - Recognise when a simple fair test is necessary and help to decide how to set it up. - Can think of more than one variable factor. - Identify differences, similarities or changes related to simple scientific ideas and processes. - Talk about criteria for grouping, sorting and classifying and use simple keys - Gather, record, classify and present data in a variety of ways to help in answering questions. - Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
Autumn 2	Properties of materials	- 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 - give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic	Hardness, solubility, transparency, conductivity, electrical, thermal, magnets,	
Spring 1	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	Light, dark, reflect surface, Natural, star, Sun Moon, shadow, Blocked, solid Artificial,	

		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.	Sunlight, dangerous protect, eye	- Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. - Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. - Use straightforward scientific evidence to answer questions or to support their findings. **<u>Working scientifically vocabulary</u>** Research, relevant questions, scientific enquiry, comparative and fair test, observation, accurate, measurements, thermometer, data logger, gather, record, classify, present, diagrams, keys, bar chart, tables, conclusion, prediction, method, differences, similarities, evidence, improvements, construct, interpret, secondary sources, patterns, relationships
	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.	Appliances, electricity, electrical circuit, cell, wire, bulb, switch buzzer, danger, electrical safety, series circuit, insulator, conductor	
	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 - 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	Vibrate, vibration, vibrating air, medium, ear, hear sound, volume, pitch, faint, fainter, loud, louder	

		increases.		
Year 5				
Term	**Unit**	**Knowledge**	**Key vocabulary**	**Working scientifically skillsand vocabulary**
Autumn 1	Animals including humans	- describe the changes as humans develop to old age.	Puberty, life cycle, gestation, growth, reproduce, foetus, baby, fertilisation, toddler, child, teenager, adult, old age, life expectancy, adolescence, adulthood, childhood	**Working scientifically skills** - Begin to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. - Begin to make their own decisions about what observations to make, what measurements to use and how long to make them for and whether to repeat them. Choose the most appropriate equipment and explain how to use it accurately. - Begin to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. - Begin to identify patterns that might be found in the natural environment. - Begin to use test results to make predictions to set up further comparative and fair tests. - Begin to recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. - Begin to suggest improvements to my method and give reasons. - Begin to decide when it is appropriate to do a fair test. - Begin to use and develop keys and other information records to identify, classify and describe living things and materials. - Begin to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. - Begin to report and present findings from enquiries. - Begin to decide how to record data from a choice of familiar approaches. - Begin to report and present 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
Autumn 2	Solids, liquids and gases	- compare and group materials together, according to whether they are solids, liquids or gases - 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 - 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. - 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 - demonstrate that dissolving, mixing and changes of state are reversible changes - explain that some changes result in the formation of new materials, and	Solid, liquid, gas, solidify, state, degrees, Celsius, evaporation, condensation, water cycle, water vapour, dissolve, solution, mixture filter, reversible, irreversible, thermometer, acid, solubility, transparency, separate, burning, rusting,	

		that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.		presentations. - Begin to draw conclusions based on their data and observations, use evidence to justify their ideas, use scientific knowledge and understanding to explain their findings. - Begin to identify scientific evidence that has been used to support or refute ideas or arguments. **<u>Working scientifically vocabulary</u>** Scientific enquiry, variable, repeat readings, accuracy, precision, measurements, scientific diagrams, classification keys, tables, scatter graphs, bar graphs, line graphs, prediction, comparative and fair test, conclusions, relationship, support, refute ideas or arguments, identify, classify, describe, patters, degree of trust, systematic, quantitative measures
Spring 1	Forces	- 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 surfaces - recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	Gravity, air, resistance, water resistance, friction, surface, force, effect, move, accelerate, decelerate, Stop, change direction, brake, mechanism, pulley, gear, spring, theory of gravitation, Galileo Galilei, Isaac Newton	
	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.	Earth, Sun, Moon, planets, stars, solar system, Mercury Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, rotate, day, night, Aristotle, Ptolemy, Galileo, Copernicus, Brahe, Alhazen, orbit, axis, spherical, heliocentric, geocentric, hemisphere, season, tilt	
Summer 2	Light	- 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.	Light, travels, straight, reflect, reflection, light source, object, shadows, mirrors, periscope, rainbow, filter	

Year 6				
Term	**Unit**	**Knowledge**	**Key vocabulary**	**Working scientifically skillsand vocabulary**
Spring 1	Animals including humans	- 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.	Internal organs, heart, lungs, liver, kidney, brain, skeletal, skeleton, muscle, muscular, digest, digestion, digestive, circulatory system, heart, blood vessels, blood, impact, diet, exercise, drugs, lifestyle, nutrients, water, damage, drugs, alcohol, substance	**<u>Working scientifically skills</u>** - Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary - Make their own decisions about what observations to make, what measurements to use and how long to make them for and whether to repeat them. Choose the most appropriate equipment and explain how to use it accurately - Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. - Identify patterns that might be found in the natural environment. - Use test results to make predictions to set up further comparative and fair tests. - Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. - Suggest improvements to my method and give reasons. Begin to decide when it is appropriate to do a fair test. - Use and develop keys and other information records to identify, classify and describe living things and materials. - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. - Report and present findings from enquiries. - Decide how to record data from a choice of familiar approaches.
	Electricity	- associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit - compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches - use recognised symbols when representing a simple circuit in a diagram.	Voltage, brightness, volume, switches, danger, series circuit, electrical safety, sign, circuit, diagram, switch, bulb, buzzer, motor, recognised symbols	
Spring 2	Habitats	- describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals - give reasons for classifying plants and animals based on specific characteristics.	Classify, compare Linnaean, Carl Linnaeus, classification, domain, kingdom, phylum, class, order, family, genus, species, characteristics, vertebrates, invertebrates, microorganisms, organism, flowering, non-flowering	

	Evolution	- 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	Evolution, adaption, inherited traits, adaptive traits, natural selection, inheritance, Charles Darwin, Alfred Wallace, DNA, genes, variation, parent, offspring, fossil, environment, habitat, fossilisation, plants, animals, living thing	- Report and present 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. - Draw conclusions based on their data and observations, use evidence to justify their ideas, use scientific knowledge and understanding to explain their findings. - Identify scientific evidence that has been used to support or refute ideas or arguments. **<u>Working scientifically vocabulary</u>** Scientific enquiry, variable, repeat readings, accuracy, precision, measurements, scientific diagrams, classification keys, tables, scatter graphs, bar graphs, line graphs, prediction, comparative and fair test, conclusions, relationship, support, refute ideas or arguments, identify, classify, describe, patters, degree of trust, systematic, quantitative measures