Wallsend Jubilee Primary School
Skills Progression: Science

	Strands	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	
Working scientifically	Planning	Observing: Will watch an adult for a sustained period. Predicting: Recalling what has happened last time. Experimenting and exploring: Is confident to engage with materials and resources independently Explaining: Is using some relevant naming vocabulary Discussing: Will respond to questions when asked directly some yes/no answers as well as some linked vocabulary. Verbalising: Will offer relevant vocabulary from memory Investigating: Returns to materials and resources in self-choice time and works with them independently. Hypothesising: Gives responses with include "because Problem solving: Can ask for resources or materials which may help their task / play. Implements their plan. Recording: Can make a collection (in a range of ways), noticing similarities and differences Decision making: Will set own challenges and goals for self-directed time. Can decide on a task. Questioning: Asks questions relating to the task in hand Making: Will work with materials they have chosen and complete a task Constructing own ideas: Begins to plan a task for themselves. Might involve using the same or similar material	Observing: Watching carefully and mimicking skills and new approaches Predicting: Suggesting possibilities for a next step /outcome Experimenting and exploring: Confident to create own" experiments and investigations Explaining: Can describe some actions and outcomes. Uses descriptive vocabulary with some accuracy. Discussing: Sharing ideas and knowledge with confidence, beginning to give longer responses Verbalising: Gives answers and opinions in full sentences and uses new vocabulary appropriately Investigating: Works with initiative, seeking those materials and resources which will further their investigation Interpreting: Makes links to previous experiences. Can recall other experiences. Hypothesising: Will confidently make a prediction. "I think that…" "Maybe…""Because…" "Then…" Problem Solving: Can respond to challenges set by adults, can try a number of approaches in order to success. Recording: Can demonstrate a range of ways of working and recording, including collections, drawings, photographs Decision making: Makes a plan and sticks to it. Can remember what they are trying to achieve. Will persevere. Questioning: How and why	asking simple questions and recognizing that they can be answered in different ways	asking simple questions and recognizing that they can be answered in different ways	Asking relevant questions and using different types of scientific enquiries to answer them. Setting up simple practical enquiries, comparative and fair tests	Asking relevant questions and using different types of scientific enquiries to answer them. Setting up simple practical enquiries, comparative and fair tests	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	Plan scie que reco vari
	Observing			Observing closely, using simple equipment performing simple tests identifying and classifying	Observing closely, using simple equipment performing simple tests identifying and classifying	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	Taki a ra equ accu taki app
	Recording			Gathering and recording data (Venn /Carroll diagrams, drawings, tables, charts) to help in answering questions	Gathering and recording data (Venn /Carroll diagrams, drawings, tables, charts) to help in answering questions.	Gathering, recording, classifying and presenting data in a variety of ways to help in answering the question. Recording findings using simple scientific language, drawings, labelled diagrams and tables. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	Gathering, recording, classifying and presenting data in a variety of ways to help in answering the question. Recording findings using simple scientific language, drawings, labelled diagrams, bar charts and tables, classification keys. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar graphs. Using test results to make predictions to set up further comparative and fair tests	Rec resu com diag clas scat rela grap data Usin pred furt fair
	Concluding			Using their observations and ideas to suggest answers to questions	Using their observations and ideas to suggest answers to questions	Reporting on findings from enquiries, including oral and written, 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	Reporting on findings from enquiries, including oral and written, 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	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	Rep find incl rela exp of t writ disp pres
	Evaluating					Using results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests	Using results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests	Identifying scientific evidence that has been used to support or refute ideas or arguments	Iden that sup argu

		Amending Ideas: Can take support / extension from others and is prepared to “have a go”	questions. Can ask questions about things that have already happened and things that are going to happen Making: Works productively with self-chosen materials and those given to them by adults. Will persevere with new or tricky tools / materials in order to complete a range of tasks. Constructing own ideas: Can make detailed plans for a task. Often leads the learning of others. Uses a wide range of materials and resources Amending Ideas: Can see better /different ways of doing something for themselves. Can go back to the beginning and start again.						
Chemistry	Rocks	Begin to explore rocks and other materials within the environment using a range of senses.	Can look at the features of rocks within the environment and talk about how they are the same /different. Can sort by property.			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.			
	States of matter	Can use simple describing words to describe different states, such as hard, cold, wet etc Will explore mixing materials together Use sieves and colanders in the sand, water and mud kitchen and explores what happens.	Can verbalise some processes such as melting and freezing and will investigate these processes. Describe what will happen to different materials when they are mixed together, such as adding water to mud or mixing oil and water. Can articulate how sieves and colanders work and can chose these as tools for simple investigations					Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible 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	
	materials	Begins to verbalise different textures Uses materials for a range of tasks Sorts materials based on simple criteria such as colour	Compares and describes textures with some accuracy Sorts materials by property and make collections based on their own criteria Talks about similarities and differences of different 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.	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.	.	
Physics	Earth and Space	Describe what the weather is like	Observe the weather and describe how it may change over different seasons Describe why some things happen in the weather i.e. it is snowing because it is cold.	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.				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.	
	Sound	Observe and identify simple sounds in the environment	Observe and identify sounds in the environment and where these sounds originate from				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		
	Light	Identify shadows	Observe and investigate shadows, including how to change shadows and make different shapes and how different equipment changes the outcome.			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.			Rec to t Use in st that

						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 a solid object. Find patterns in the way that the size of shadows change.			bec refl Exp bec ligh fron and Use in s why sha ther
	Forces	Investigates magnets within play. Make ramps, water ways and marble runs in order to support getting an object from one place to another.	Investigate magnets and sort materials into magnetic / non magnetic Create and investigate ramps, water ways, and marble runs noticing what effects positioning of a ramp may have on outcome			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 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.		Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effects of air resistance….. …….water-resistance and friction that act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	
Physics	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.		Ass lam buz volt circ Con for com incl bulb buz pos Use whe circ

							Recognise some common conductors and insulators, and associate metals with being good conductors.		
Biology	Plants	Sees the similarities of plants – all having leaves etc Begins to talk about looking after plants – for example watering it. Notice that plants grow and change	Can talk about the sequence of plant growth Begins to name parts of a plant, such as root, stem, leaves Is able to talk about basic requirements that plants need to grow such as soil, water, sunlight. Sees the differences between plant features, some leaves are fleshy, others are spikey etc	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees.	Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.			
	Animals including humans	Knows that they were once a baby Can look at a baby photo of themselves, notices differences between then and now Sees similarities between animals – having legs, not having legs etc Knows that living things die Knows the noises familiar animals make.	Knows that living things include plants, animals and humans Can talk about the sequence of human and animal growth Sees the difference between animal features, 3 toes, 5, toes, claws, webbed feet etc Can sort animals into animal groups such as arctic, farm etc. Sees links between plants and animals - they both need water to survive	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	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* **To be taught after .98 of SRE curriculum*	

	Living things	Know that some things are alive and somethings are not.	Knows that living things include plants, animals and humans Sees links between plants and animals - they both need water to survive Takes responsibility for plants such as watering Sees the differences between plant features, some leaves are fleshy, others are spikey etc		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-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		Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers to living things.	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird* Describe the life processes of reproduction in some plants and animals* **To be taught after .98 of SRE curriculum*	Des are grou obs and diff orga ani Give plan spe <u>Evo</u> Rec hav that info thin Eart Rec pro sam offs iden Iden plan thei diff ada evo
	Organisation and Communication	*Fieldwork – sessions in outdoor area.* *Weather strand to run throughout the year.* *Trips to Rising Sun Country Park and Wallsend Park*	*Fieldwork – sessions in outdoor area.* *Weather and seasonal change strand to run throughout the year.* *Trip to farm during Summer Term*	*Fieldwork – sessions in outdoor area.* *Seasonal change strand to run throughout the year.*	*Physical activities to link to PE.* *Visit to local farm during Spring Term.* *Visit from a local vet/veterinary charity.*	*Diet and healthy eating link to PSHCE.* *Shadows practical activities to occur throughout the year (build on Y1 seasonal change)*	*Visit to see living things in local area.* *Visit from musician/links to music curriculum.*	*Ensure Biology strands follow on from SRE objectives.* *Visit to/from industry to see simple mechanisms in action.* *'blow-up-planets' needed for teaching Space practically.*	*Visi – Fo amp*
	Overarching vocabulary			Deciduous Evergreen Carnivore Herbivore Omnivore Seed Bulb Root Leaf/leaves Fruit Flowers Stem Squash Bend Twist	Blossom Structure Squash Bend Twist Stretch Living Dead Food-source Inanimate Habitat	Nutrients Transportation Xylem Phloem Shoots Pollination Dispersal Formation Transparent Translucent Opaque Attract Repel Support Protection	Producer Predator Prey Mouth Tongue Teeth Oesophagus Stomach Small intestine Large intestine Canine Premolar Molar Incisor Cells	hardness, solubility, transparency conductivity solubility thermal substance solution rearing hatching offspring reproduction air-resistance water-resistance friction gravity	Ver Inve Hea Bloo Lun Bloo Cap Arte Trac Red Whi Plas Mic Volt Con

				Stretch Wood Plastic Glass Metal Water rock.		Movement Muscles *Children do **not** need to name individual bones/muscles within the human body.	Wires Bulbs Switches Buzzers Conductor Insulator Series circuit Parallel circuit Switch (circuit)	levers pulleys gears filtration evaporation sieving	Cell Circ Evo Inhe Cha Vari Ada