



Wallsend Jubilee Primary School
Skills Progression: Science

	Strands	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working scientifically	Planning	<p>Understand simple questions about 'who', 'what' and 'where' (but generally not 'why').</p> <p>Start taking part in some group activities which they make up for themselves; Match their developing physical skills to tasks and activities in the setting</p> <p>Choose the right resources to carry out their own plan.</p> <p>Use one-handed tools and Equipment</p> <p>Develop their own ideas and then decide which materials to use to express them.</p> <p>Plan and think ahead about how they will explore or play with objects.</p> <p>Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen, or one which is suggested to them.</p>	<p>Ask questions to find out more and to check they understand what has been said to them</p> <p>Use talk to help work out problems and organise thinking and activities</p> <p>Create collaboratively, sharing Ideas, resources and skills.</p>	To continue and build on enquiry from Early Years... asking simple questions and recognizing that they can be answered in different ways	To continue and build on enquiry from Early Years... asking simple questions and recognizing that they can be answered in different ways	<p>Asking relevant questions and using different types of scientific enquiries to answer them.</p> <p>Setting up simple practical enquiries, comparative and fair tests</p>	<p>Asking relevant questions and using different types of scientific enquiries to answer them.</p> <p>Setting up simple practical enquiries, comparative and fair tests</p>	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
	Observing	<p>Notice and ask questions about differences</p> <p>Compare amounts, saying 'lots', 'more' or 'same'.</p> <p>Compare sizes, weights etc. using gesture and language - 'bigger/little/smaller', 'high/low', 'tall', 'heavy'.</p> <p>Compare quantities using language: 'more than', 'fewer than'.</p> <p>Talk about and identify the patterns around them</p> <p>Talk about what they see, using a wide vocabulary.</p>	<p>Explore different materials, using all their senses to investigate them in order to develop their ideas about how to use them and what to make.</p> <p>Compare length, weight and capacity.</p> <p>Explore the natural world around them</p>	Observing closely, using simple equipment performing simple tests identifying and classifying	Observing closely, using simple equipment performing simple tests identifying and classifying	<p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p>	<p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p>	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate

		Explore different materials, using all their senses to investigate them							
	Recording	Respond to what they have heard, expressing their thoughts and feelings.	Articulate their ideas and thoughts in well-formed sentences. Connect one idea or action to another using a range of connectives. Describe events in some detail. Describe what they see, hear and feel whilst outside.	Gathering and recording data (Venn 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	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs to show relationships and line graphs for continuous data. Using test results to make predictions to set up further comparative and fair tests
	Concluding	Understand a question or instruction. Understand 'why' questions. Make choices and explore different resources and materials	Use talk to explain how things work and why they might happen. Select shapes appropriately Compare length, weight and capacity.	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	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
	Evaluating	Compare amounts, saying 'lots', 'more' or 'same'. Compare sizes, weights etc. using gesture and language - 'bigger/little/smaller', 'high/low', 'tall', 'heavy'. Compare quantities using language: 'more than', 'fewer than'. Make comparisons between objects relating to size, length, weight and capacity.	Return to and build on their previous learning, refining ideas and developing their ability to represent them.	Return to and build on their previous learning, refining ideas and developing their ability to represent them.	Return to and build on their previous learning, refining ideas and independently developing their ability to represent them.	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 fair and comparative tests	Identifying scientific evidence that has been used to support or refute ideas or arguments	Identifying scientific evidence that has been used to support or refute ideas or arguments
Chemistry	Rocks					Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Describe in simple terms how fossils are formed when things			

						that have lived are trapped within rock. Recognise that soils are made from rocks and organic matter.			
States of matter	Talk about the differences between materials and changes they notice, specifically cooking, melting and burning.	Explore and investigate the differences between materials and changes they notice, specifically with clay and mud. Begin to explain the differences between materials and changes they notice, specifically cooking, melting.						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	Identify familiar objects and properties for practitioners when they are described: for example: 'Katie's coat', 'blue car', 'shiny apple'. Explore different materials and tools. Explore materials with different properties. Explore natural materials, indoors and outside. Use all their senses in hands on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about the differences	Select, rotate and manipulate shapes in order to develop spatial reasoning skills. (Found Materials) Explain the purpose of everyday items and the materials they are made from (eg waterproof boots)	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.		

		<p>between materials and changes they notice.</p> <p>Explore different materials, using all their senses to investigate them. Manipulate and play with different materials.</p>							
Physics	Earth and Space	<p>Use all their senses in hands-on exploration of natural Materials</p> <p>Understand the effect of changing seasons on the natural world around them.</p> <p>Explore different materials, using all their senses to investigate them.</p> <p>Join different materials and explore different textures.</p>		<p>Observe changes across the four seasons, through first hand observations, including collecting data. Observe and describe weather associated with the seasons. Observe and describe changes to day length, including how it varies across the seasons.</p>				<p>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.</p>	
	Sound	<p>Enjoy singing, music and toys that make sounds.</p> <p>Use intonation, pitch and changing volume when 'talking'.</p> <p>Explore their voices and enjoy making sounds.</p> <p>Make rhythmical and repetitive sounds. Explore a range of sound makers and instruments and play them in different ways.</p> <p>Listen with increased attention to sounds. Respond to what they have heard, expressing their thoughts and feelings.</p> <p>Sing the pitch of a tone sung by another person ('pitch match').</p> <p>Sing the melodic shape (moving melody, such as up and down, down and up) of familiar songs.</p>	<p>Sing in a group or on their own, increasingly matching the pitch and following the melody.</p>				<p>Identify how sounds are made, associating some of them with something vibrating.</p> <p>Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>Recognise that sounds get fainter as the distance from the sound source</p>		
	Light	<p>Explore colour and colour mixing</p> <p>Observe how abundance of natural light varies across the seasons.</p>	<p>Explore colour and colour mixing, through use of real life observation and scientific equipment including torches and the light table.</p> <p>Predict and narrate new colours through colour mixing.</p>		<p>Recognise that they need light in order to see things and that dark is the absence of light.</p> <p>Notice that light is reflected from surfaces.</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p> <p>Recognise that shadows are formed when the light from a</p>			<p>Recognise that light appears to travel in straight lines.</p> <p>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.</p> <p>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.</p>	

Physics						light source is blocked by a solid object. Find patterns in the way that the size of shadows change.			Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
	Forces	Explore and talk about different forces they can feel, including observing how magnets react to metals and other magnets. Observe objects sinking and floating. Explore how things work, including pulleys, switches and mechanical equipment.	Investigate floating and sinking, making the link to objects filled with air. *Explicit manipulation of play-doh by twisting, turning, rolling. Demonstrate how to achieve a goal with mechanical systems.			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. Identify machines in which such systems are used.	
	Electricity	Explore how things work, including switches.				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.		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.	

Biology	Plants	<p>Understand the key features of the life cycle of a plant and an animal</p> <p>Plant seeds and care for growing plants.</p> <p>Explore and respond to different natural phenomena in their setting and on trips, including in woodland and at the seaside.</p>	<p>Know and demonstrate how to nurture edible plants</p>	<p>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>Use the correct names to describe the basic structure of a variety of common flowering plants, including trees.</p>	<p>Observe and describe how seeds and bulbs grow into mature plants.</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <p>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.</p> <p>Investigate the way in which water is transported within plants.</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>			
	Animals including humans	<p>Establish their sense of self.</p> <p>Make healthy choices about food, drink, activity and tooth-brushing.</p>	<p>Know and talk about the different factors that support their overall health and wellbeing</p> <p>Further develop the skills they need to manage the school day successfully:</p>	<p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p>	<p>Notice that animals, including humans, have offspring which grow into adults.</p> <p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>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.</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>Describe the simple functions of the basic parts of the digestive system in humans.</p> <p>Identify the different types of teeth in humans and their simple functions.</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>Describe the changes as humans develop to old age*</p> <p><i>*To be taught after .98 of SRE curriculum</i></p>	<p>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p>
	Living things	<p>Notice differences between people</p> <p>Make connections between the features of their family and other families</p>	<p>Understand the effect of changing seasons on the natural world around them.</p> <p>Recognise some</p>		<p>Explore and compare the differences between things that are living, dead, and things that have never been alive.</p>		<p>Recognise that living things can be grouped in a variety of ways.</p> <p>Explore and use classification keys to help group, identify and name a</p>	<p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird*</p>	<p>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-</p>

		<p>Explore and respond to different natural phenomena in their setting and on trips.</p> <p>Use all their senses in hands-on exploration of natural materials.</p> <p>Understand the key features of the life cycle of a plant and an animal</p> <p>Begin to understand the need to respect and care for the natural environment and all living things.</p>	<p>environments that are different to the one in which they live</p> <p>Understand the difference between man-made and natural</p>		<p>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.</p> <p>Identify and name a variety of plants and animals in their habitats, including micro-habitats.</p> <p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different</p>		<p>variety of living things in their local and wider environment.</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p>Describe the life processes of reproduction in some plants and animals*</p> <p><i>*To be taught after .98 of SRE curriculum</i></p>	<p>organisms, plants and animals.</p> <p>Give reasons for classifying plants and animals based on specific characteristics.</p> <p><u>Evolution</u> Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>
	Organisation and Communication	Both teacher-led and independent tasks	Both teacher-led and independent tasks	<p>Fieldwork – sessions in outdoor area.</p> <p>Seasonal change strand to run throughout the year.</p>	<p>Physical activities to link to PE.</p> <p>Visit to local farm during Spring Term.</p> <p>Visit from a local vet/veterinary charity.</p>	<p>Diet and healthy eating link to PSHCE.</p> <p>Shadows practical activities to occur throughout the year (build on Y1 seasonal change)</p>	<p>Visit to see living things in local area.</p> <p>Visit from musician/links to music curriculum.</p>	<p>Ensure Biology strands follow on from SRE objectives.</p> <p>Visit to/from industry to see simple mechanisms in action.</p> <p>'blow-up-planets' needed for teaching Space practically.</p>	<p>Visit to/from local biologists – Falconry/reptiles and amphibians/sea creatures.</p>
	Overarching vocabulary	<p>'bigger/little/smaller', 'high/low', 'tall', 'heavy'</p> <p>Shiny, dull</p> <p>cooking, melting and burning.</p> <p>Heavy, light</p> <p>How, why</p> <p>predict</p>	<p>Same, different, hard, soft, shiny, rough, smooth</p> <p>State, change, what's happened, ingredients, runny, combine</p> <p>Plants, stem, root, vegetable, leaves, soil, flower</p> <p>plastic, card, paper, glass, tin,</p> <p>Tell me more, ask a question, how, why</p> <p>Weather, sun, rain, wind</p>	<p>Deciduous</p> <p>Evergreen</p> <p>Carnivore</p> <p>Herbivore</p> <p>Omnivore</p> <p>Seed</p> <p>Bulb</p> <p>Root</p> <p>Leaf/leaves</p> <p>Fruit</p> <p>Flowers</p> <p>Stem</p> <p>Squash</p> <p>Bend</p> <p>Twist</p> <p>Stretch</p> <p>Wood</p> <p>Plastic</p> <p>Glass</p> <p>Metal</p> <p>Water</p> <p>rock.</p>	<p>Blossom</p> <p>Structure</p> <p>Squash</p> <p>Bend</p> <p>Twist</p> <p>Stretch</p> <p>Living</p> <p>Dead</p> <p>Food-source</p> <p>Inanimate</p> <p>Habitat</p>	<p>Nutrients</p> <p>Transportation</p> <p>Xylem</p> <p>Phloem</p> <p>Shoots</p> <p>Pollination</p> <p>Dispersal</p> <p>Formation</p> <p>Transparent</p> <p>Translucent</p> <p>Opaque</p> <p>Attract</p> <p>Repel</p> <p>Support</p> <p>Protection</p> <p>Movement</p> <p>Muscles</p> <p><i>*Children do not need to name individual bones/muscles within the human body.</i></p>	<p>Producer</p> <p>Predator</p> <p>Prey</p> <p>Mouth</p> <p>Tongue</p> <p>Teeth</p> <p>Oesophagus</p> <p>Stomach</p> <p>Small intestine</p> <p>Large intestine</p> <p>Canine</p> <p>Premolar</p> <p>Molar</p> <p>Incisor</p> <p>Cells</p> <p>Wires</p> <p>Bulbs</p> <p>Switches</p> <p>Buzzers</p> <p>Conductor</p> <p>Insulator</p> <p>Series circuit</p>	<p>hardness,</p> <p>solubility,</p> <p>transparency conductivity</p> <p>solubility</p> <p>thermal substance</p> <p>solution</p> <p>rearing</p> <p>hatching</p> <p>offspring</p> <p>reproduction</p> <p>air-resistance</p> <p>water-resistance</p> <p>friction</p> <p>gravity</p> <p>levers</p> <p>pulleys</p> <p>gears</p> <p>filtration</p> <p>evaporation</p> <p>sieving</p>	<p>Vertebrate</p> <p>Invertebrate</p> <p>Heart</p> <p>Blood</p> <p>Lungs</p> <p>Blood vessels</p> <p>Capillaries</p> <p>Arteries</p> <p>Trachea</p> <p>Red blood cells</p> <p>White blood cells</p> <p>Plasma</p> <p>Micro-organisms</p> <p>Voltage</p> <p>Components</p> <p>Cells (battery)</p> <p>Circuit symbols</p> <p>Evolution</p> <p>Inheritance</p> <p>Chance</p> <p>Variation</p> <p>Adaptation</p>

							Parallel circuit Switch (circuit)		
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