



Nursery

Reception

**AT ALL TIMES TEACHERS AND PRACTITIONERS WILL MODEL LANGUAGE STRUCTURES EXPECTING CHILDREN TO USE THESE WITH INCREASING INDEPENDENCE AS A FORERUNNER TO LANGUAGE SKILLS USED IN SCIENCE IN THE NATIONAL CURRICULUM.**

- Understand 'why' questions
- Talk about what they see, using a wide [science] vocabulary
- Hands on exploration using senses.
- Explore collections of materials and identify similar and different properties
- Explores and talks about forces (push and pull)
- Changing seasons – understand that the weather changes, and in different places you find different weather.
- Understand the difference between plants and animals.
- Plant seeds and care for growing plants with support.
- Know the life cycle of a butterfly.

- Use new vocabulary through the day
- Ask questions to find out more
- Articulate their ideas and thoughts in well-formed sentences
- Connect one idea or action to another
- Describe events in some detail
- Use talk to work out problems and organise thinking and activities, and to explain how things work and why they might happen
- Engage in non-fiction books
- Listen to and talk about selected non-fiction to develop a deep familiarity with new [science] knowledge and vocabulary
- Describe what they see, hear and feel
- Talks about differences between materials and the changes they notice.
- Explores non-contact forces (gravity and magnetism)
- Explores and talks about changing states (freezing/ melting, floating/ sinking)
- Names seasons and begin to understand the effect of seasons on the natural world, discussing when and how things grow.
- Can talk about different life cycles
- Can name and explore their 5 senses, explaining in simple terms what their 5 senses are.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>Over the course of an academic year, children will carry out several investigations which involve different types of enquiry approaches:</p> <ul style="list-style-type: none"> <li>• observation over time</li> <li>• identifying and classifying</li> <li>• pattern seeking</li> <li>• research</li> <li>• comparative and fair testing</li> </ul>					
Scientific Enquiry	<p><b>Asking a question:</b> Teachers encourage children to ask questions (teachers model how to ask a question).</p> <p><b>Collecting data – what is being measured or observed?:</b> With help, children can talk about what they are going to look/listen for.</p> <p>Children use sentence stem: With help we can talk about what we are going to look/listen for.</p> <p>Sort objects to a given criteria.</p> <p><b>Asking a question that could lead to a fair test:</b> Children use sentence stem: What do you think will happen to...?</p>	<p><b>Asking a question:</b> Teachers encourage children to ask questions (teachers model how to ask a question) – children use sentence stems &amp; develop in independence</p> <p><b>Collecting data – what is being measured or observed?:</b> With help, children can talk about what they are going to measure.</p> <p>Children use sentence stem: With help we can talk about what we are going to measure.</p> <p><b>Asking a question that could lead to a fair test:</b> Children use sentence stem: What do you think will happen to...if we change.....?</p>	<p><b>Asking a question:</b> With help children can ask a scientific question.</p> <p><b>Collecting data – what is being measured or observed?:</b> With help, children can talk about what they are going to observe and/or measure.</p> <p>Children use sentence stem: With help we can talk about what we are going to observe/measure.</p> <p><b>Collecting data (variables) – what might affect what is being measured or observed?:</b> Understands what a simple fair test is, and with support helps to set it up. With help, talks about/lists variables.</p> <p><b>Asking a question that could lead to a fair test:</b> Children use sentence stem with support: What do you think will happen to....if we change .....and keep....and.....the same?</p>	<p><b>Asking a question:</b> Children can ask a scientific question.</p> <p><b>Collecting data – what is being measured or observed?:</b> Children can talk about what they are going to observe and/or measure.</p> <p>Children use sentence stem: We can talk about what we are going to observe/measure.</p> <p><b>Collecting data (variables) – what might affect what is being measured or observed?:</b> Understands what a simple fair test is, and helps to set it up. Talks about/lists variables</p> <p><b>Asking a question that could lead to a fair test:</b> Children use sentence stem: What do you think will happen to....if we change .....and keep....and.....the same?</p>	<p><b>Asking a question:</b> Children can ask their own scientific questions with help</p> <p><b>Collecting data (variables) – what might affect what is being measured or observed?:</b> With help, children can decide which variable to changes and which variables to keep the same beginning to use the terms dependent and independent variable.</p> <p><b>Asking a question that could lead to a fair test:</b> Children use sentence stem: What do you think will happen to ... if we change .... and keep ..... and .... the same? (using appropriate units within the sentence).</p>	<p><b>Asking a question:</b> Children can ask their own scientific questions.</p> <p><b>Collecting data (variables) – what might affect what is being measured or observed?:</b> Children can decide which variable to changes and which variables to keep the same using the terms dependent and independent variable</p> <p><b>Asking a question that could lead to a fair test:</b> Children use sentence stem: What do you think will happen to ... if we change .... and keep ..... and .... the same? (using appropriate units within the sentence).</p>

<b>Practical Investigation</b>	<p><b>Planning:</b> Teacher model (aloud) what equipment/information is needed to find things out; children to practise and do the same with support.</p> <p><b>Gathering Evidence:</b> Use senses and simple equipment to describe what is around them.</p> <p>Tell others what things are like using their senses</p>	<p><b>Planning:</b> Teacher model (aloud) what equipment/information is needed to find things out; children to practise and do the same with greater independence.</p> <p><b>Gathering Evidence:</b> Uses different types of scientific enquiry ~ children measure with adult support</p>	<p><b>Predict what might happen:</b> Children use sentence stem with support: I think. . . . might happen because. . . . (based on everyday knowledge).</p> <p><b>Planning:</b> With help, decides what equipment will be needed for an enquiry.</p> <p>Learns how to use equipment and take measurements (eg thermometers, force meters, data loggers).</p> <p><b>Gathering Evidence:</b> With help, collects data from observations and measures accurate standard units using a range of equipment (including dataloggers)</p>	<p><b>Predict what might happen:</b> Children use sentence stem: I think. . . . might happen because. . . (based on everyday knowledge).</p> <p><b>Planning:</b> Decides what equipment will be needed for an enquiry.</p> <p>Learns how to use equipment and take measurements (eg thermometers, force meters, data loggers).</p> <p><b>Gathering Evidence:</b> Collects data from observations and measures accurate standard units using a range of equipment (including dataloggers)</p>	<p><b>Decide which type of enquiry is needed:</b> Children are beginning to make their own decisions about the type of enquiry to carry out.</p> <p><b>Collecting data – what is being measured or observed?:</b> With help, children can decide the most appropriate observations and/or measurements to take and how long to take them for.</p> <p><b>Predict what might happen:</b> Children use sentence stem: I think. . . . might happen because. . . (based on scientific knowledge).</p> <p><b>Planning:</b> With help, children decide the most appropriate equipment to use to make observations or measure.</p> <p><b>Gathering Evidence:</b> With help, children make accurate and precise measurements and begin to understand the need to repeat them.</p> <p>Children use sentence stems: This is what I have observed.....; This is what I have measured.....</p>	<p><b>Decide which type of enquiry is needed:</b> Children make their own decisions about the type of enquiry to carry out.</p> <p><b>Collecting data – what is being measured or observed?:</b> Children can decide the most appropriate observations and/or measurements to take and how long to take them for.</p> <p><b>Predict what might happen:</b> Children use sentence stem: I think. . . . might happen because. . . (based on scientific knowledge).</p> <p><b>Planning:</b> Children decide the most appropriate equipment to use to make observations or measure.</p> <p><b>Gathering Evidence:</b> Children make accurate and precise measurements and begin to understand the need to repeat them.</p> <p>Children use sentence stems: This is what I have observed.....; This is what I have measured.....</p>
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Communicating	<p><b>Record Findings:</b> Begins to record data in simple templates provided.</p> <p>Responds to prompts to talk about what they have found out ~ Children can talk about has been found at and use tables etc from the teacher to help them record what they find out.</p>	<p><b>Sorting &amp; Classifying:</b> Compare things and decide how they can be sorted and grouped (with help leading to independence).</p> <p><b>Record Findings:</b> Use scientific vocab to communicate findings.</p> <p>Responds to prompts to talk about what they have found out ~ Children can talk about has been found at and use tables etc from the teacher to record what they find out.</p>	<p><b>Sorting &amp; Classifying:</b> With support, discuss ideas for grouping, sorting &amp; classifying.</p> <p>Use simple keys to classify (objects, living things and materials).</p> <p><b>Record Findings:</b> With help, talks about and makes decisions about how to record (using simple scientific language).</p> <p>With help, shows what has been found out using notes, simple tables, labelled diagrams, drawing, bar charts etc(using standard units).</p> <p>Begins to report findings through oral &amp; written explanations, displays or presentations of results.</p>	<p><b>Sorting &amp; Classifying:</b> Discusses ideas for grouping, sorting &amp; classifying.</p> <p>Use simple keys to classify (objects, living things and materials).</p> <p><b>Record Findings:</b> Talks about and makes decisions about how to record (using simple scientific language).</p> <p>Shows what has been found out using notes, simple tables, labelled diagrams, drawing, bar charts etc(using standard units).</p> <p>Report findings through oral &amp; written explanations, displays or presentations of results.</p>	<p><b>Sorting &amp; Classifying:</b> With help, children use classification keys and databases to describe, identify and classify living things and materials.</p> <p><b>Record Findings:</b> With help, children choose the best way to record data including scientific diagrams &amp; labels, classification keys, tables, line graphs and bar charts.</p> <p>With help, children use their results to explain relationships between variables (er statements).</p> <p>With help, children present their findings to an audience using displays, written text, ppt etc.</p> <p>With help, children use simple models to describe scientific ideas.</p> <p>Children use sentence stem: This is a model of..... and it shows us.....</p>	<p><b>Sorting &amp; Classifying:</b> Children use classification keys and databases to describe, identify and classify living things and materials.</p> <p><b>Record Findings:</b> Children choose the best way to record data including scientific diagrams &amp; labels, classification keys, tables, line graphs and bar charts.</p> <p>Children use their results to explain relationships between variables (er statements).</p> <p>Children present their findings to an audience using displays, written text, ppt etc.</p> <p>Children use simple models to describe scientific ideas.</p> <p>Children use sentence stem: This is a model of..... and it shows us.....</p>
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Interpreting Evidence	<p><b>Notice patterns &amp; Relationships:</b> Says what has changed when observing objects, living things or events.</p> <p>Children use sentence stem – We noticed....happen/ change when....</p>	<p><b>Notice Patterns and Relationships:</b> Says whether what happened was what was expected; notices similarities, differences and patterns.</p> <p>Children use sentence stem: We thought this might happen. . . .and the surprise was . . .</p>	<p><b>Notice Patterns and Relationships:</b> With help, look for straightforward patterns, similarities &amp; differences in data in order to draw simple conclusions.</p> <p>Children use sentence stems: ~From the data, this is the change/ pattern we noticed. ~These are the similarities/ differences between . . . ~[teach 'er' statements for children to use with help] The . . . .er the . . . . . , the . . . . . er the . . . .</p> <p><b>Suggest Improvements:</b> With support, begins to identify new questions arising from the data; with help makes predictions for new values within or beyond the data collected.</p> <p>Children use sentence stems: ~ If I did this again, I would . . . ~ If I did. . . I think my data would change because . . .</p>	<p><b>Notice Patterns and Relationships:</b> Looks for straightforward patterns, similarities &amp; differences in data in order to draw simple conclusions.</p> <p>Children use sentence stems: ~From the data, this is the change/ pattern we noticed. ~These are the similarities/differences between . . . ~[teach 'er' statements] The . . . .er the . . . . . , the . . . . . er the . . . .</p> <p><b>Suggest Improvements:</b> Begins to identify new questions arising from the data; makes predictions for new values within or beyond the data collected.</p> <p>Children use sentence stems: ~ If I did this again, I would . . . ~ If I did. . . I think my data would change because . . .</p>	<p><b>Notice Patterns and Relationships:</b> With help, children look for different causal relationships in their data.</p> <p>Children use sentence stem: From the data in my graph/table I found out the relationship between X and Y (begins to use 'er' statements from Y4 to link relationships).</p> <p><b>Suggest Improvements:</b> With help, children begin to use results to identify when further tests/observations might be needed.</p> <p>With help, children use sentence stem: if I did this again, I would do ..... because.....</p>	<p><b>Notice Patterns and Relationships:</b> Children look for different causal relationships in their data.</p> <p>Children use sentence stem: From the data in my graph/table I found out the relationship between X and Y (Use 'er' statements from Y4&amp;5 to link relationships)</p> <p><b>Suggest Improvements:</b> Children begin to use results to identify when further tests/observations might be needed.</p> <p>Children use sentence stem: if I did this again, I would do ..... because.....</p>
Errors and Anomalies					<p><b>Recognises 'spooky' results:</b> With help, children begin to identify evidence that refutes/supports ideas.</p> <p>Children use sentence stem: I didn't think ..... would happen. This is a spooky result. It might have happened because.....</p>	<p><b>Recognises 'spooky' results:</b> Children begin to identify evidence that refutes and or supports ideas.</p> <p>Children use sentence stem: I didn't think ..... would happen. This is a spooky result. It might have happened because.....</p>

Plants	<p>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>Identify and 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>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>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).</p> <p>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</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>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>

<p style="text-align: center;"><b>Everyday Materials</b></p>	<p>Distinguish between an object and the material from which it is made.</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</p> <p>Describe the simple physical properties of a variety of everyday materials.</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>	<p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>				
<p style="text-align: center;"><b>Seasonal Changes</b></p>	<p>Observe changes across the four seasons.</p> <p>Observe and describe weather associated with the seasons and how day length varies.</p>					

<p style="text-align: center;">Living Things and their Habitats</p>		<p>Explore and compare the differences between things that are living, dead, and things that have never been alive.</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 sources of food.</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 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 differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>Describe the life process of reproduction in some plants and animals.</p>	<p>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.</p> <p>Give reasons for classifying plants and animals based on specific characteristics.</p>
<p style="text-align: center;">Rocks</p>			<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>Recognise that soils are made from rocks and organic matter.</p>			



Light			<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 light source is blocked by an opaque object.</p> <p>Find patterns in the way that the size of shadows change.</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> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>
Forces and Magnets			<p>Compare how things move on different surfaces.</p> <p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>Observe how magnets attract or repel each other and attract some materials and not others.</p> <p>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.</p> <p>Describe magnets as having two poles.</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>		<p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</p> <p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	

States of Matter				<p>Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>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).</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>		
Sound				<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 increases.</p>		

Electricity				<p>Identify common appliances that run on electricity.</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>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.</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors.</p>		<p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>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.</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p>
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<p>Properties and Changes of Materials</p>					<p>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.</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>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.</p>	
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<p style="text-align: center;">Earth and Space</p>					<p>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>Describe the movement of the Moon relative to the Earth.</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>	
<p style="text-align: center;">Evolution and Inheritance</p>						<p>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>