

### Tonwell St Mary's School Curriculum Overview of Intent for Science

**Overall aims:**

We aim for all of our children to have an enquiring mind and to ask questions about their world and beyond. Each term, children will have the chance to develop their scientific enquiry skills with hands on experience. We aim to develop children's understanding of the implications of their science knowledge now and for the future and to prepare them to become the next STEM leaders in our community.

**Our unique context:**

Due to the unique context of our school with mixed-age classes and rolling programmes of study, we have organised our curriculum for science in the following ways:

Our Early Years children have the opportunity to be 'little scientists' exploring and investigating the world around them. The curriculum is part adult-led and part child-led to ensure they can discover and describe similarities, differences, pattern and change. We follow the national curriculum for science in Years 1-6 and utilise the programmes of study for each year group to differentiate knowledge and skills. In Key Stage 1, we develop scientific enquiry skills and subject knowledge about animals, plants, materials and seasonal changes. In Key stage 2, we ensure there is a balance of learning biology, chemistry and physics across each year, with knowledge revisited either annually or biannually. Junior children are encouraged to generate their own ideas for questions for investigation at the start of each term. Our Forest School is utilised to support science learning, particularly with biology, so children get first-hand experience.

**Tonwell Ten: circuits, life-cycle, gravity, materials, fair-test, friction, predict, habitat, energy, force.**

	Autumn Term		Spring Term		Summer Term	
EYFS Years A & B	What makes us different and unique (human body, hair and eye colour, height, skeleton)?	What makes it light or dark?	Child-led	What are seasons? How can we grow our own food? How do eggs become chicks?	Child-led	Does it float or sink?
	human body, hair and eye colour, height, skeleton	night, day, sun, moon, stars, electricity, torches, <b>circuits,</b>		seasons, change, Spring, Summer, Autumn, Winter, <b>life-cycle</b> , growth, eggs, hatch, incubate, habitat		float, sink, <b>gravity</b> , surface area, weight, water, properties, <b>materials</b>

		batteries, bulbs				
Continuous provision: cooking, water tray, investigation area • Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world. • Developing an understanding of growth, decay and changes over time. • Looks closely at similarities, differences, patterns and change.						
KS1 Year A	Do the tallest children have the biggest feet? Human body Human life cycle	What is the best material for the 3 pigs' homes?	What are the best surfaces for toy cars to travel on?	Can I design my own healthy packed lunch?	What is the best environment in school for minibeasts to live? <b>Habitat</b> , insects, spiders, woodlice, invertebrates, food chain, shelter, micro-habitat, damp, dry.	What do plants need to grow well?
	Growth, birth, death, limbs, muscle, results, bones skeleton, <b>predict, life-cycle.</b>	<b>Materials, predict</b> , brick, straw, sticks, strong, weak, flexible, conclusion	<b>Fair test</b> , surface, <b>friction</b> , vehicles, ramp, <b>prediction</b> , investigation, height, cause, <b>gravity</b> , speed up, slow down, change direction.	Health, nutrients, nutrition, protein, carbohydrate, roughage, vitamins, sweet, savoury, taste, <b>energy.</b>		Light, sunlight, soil, rain, water, seed, stem, flower, leaf, photosynthesis, <b>energy.</b>
KS1 Year B	What is the best material for an aeroplane?	Why is it important for us to exercise?	What is the most suitable material for an umbrella?	What is the best material to make a boat to cross the moat?	What is a food chain? Why is it important?	Can I name and classify plants and trees?
	Wood, fabric, glass, plastic, clay, flight, metal, paper, cardboard, <b>material, predict</b>	Health, fitness, heart-rate, muscles, regular exercise, breathe, stamina,	Wet, dry, waterproof, soggy, damp, fabric, wool, plastic, cotton, <b>material, prediction</b>	Float, sink, light, water, heavy, wood, rock, waterproof, fabric, <b>material.</b>	<b>Energy</b> , Food, Organism, Ecology, Nutrients, Ecosystem, Ecology, Consumer, Producer.	Flower, leaf, fruit, bark, berries, nuts, stem/branch, roots, deciduous, evergreen.

		strength, energy.				
KS1 Years A & B revisited objectives	<ul style="list-style-type: none"> <li>• Observe changes across the four seasons.</li> <li>• Observe and describe weather associated with the seasons and how day length varies.</li> <li>• Ask simple questions.</li> <li>• Observe closely, using simple equipment.</li> <li>• Perform simple tests.</li> <li>• Identify and classify.</li> <li>• Use observations and ideas to suggest answers to questions.</li> <li>• Gather and record data to help in answering questions.</li>   <li>• Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen.</li> <li>• Identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers.</li> <li>• Observe and describe how seeds and bulbs grow into mature plants.</li> <li>• Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> <li>• Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates.</li> <li>• Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</li> <li>• Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles, mammals and invertebrates, including pets).</li> <li>• Identify name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> <li>• Notice that animals, including humans, have offspring which grow into adults.</li> <li>• Investigate and describe the basic needs of animals, including humans, for survival (water, food and air).</li> <li>• Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene.</li>   <li>• Explore and compare the differences between things that are living, that are dead and that have never been alive.</li> <li>• 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.</li> </ul>					

	<ul style="list-style-type: none"> <li>• Identify and name a variety of plants and animals in their habitats, including micro-habitats.</li> <li>• 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.</li> <li>• Distinguish between an object and the material from which it is made.</li> <li>• Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.</li> <li>• Describe the simple physical properties of a variety of everyday materials.</li> <li>• Compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> <li>• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> <li>• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for particular uses.</li> </ul>		
KS2 Year A	<p><b>Rocks and Soils</b></p> <p><b>Evolution and Inheritance</b></p> <ul style="list-style-type: none"> <li>• Compare and group together different kinds of rocks on the basis of their simple, physical properties.</li> <li>• Relate the simple physical properties of some rocks to their formation (igneous or sedimentary).</li> <li>• Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.</li> <li>• Recognise that soils are made from rocks and organic matter.</li> <li>• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</li> <li>• Recognise that living things produce offspring of the same kind, but normally</li> </ul>	<p><b>Forces and Magnets</b></p> <p><b>Sound</b></p> <ul style="list-style-type: none"> <li>• Compare how things move on different surfaces</li> <li>• Notice that some forces need contact between 2 objects but magnetic forces can act at a distance</li> <li>• Observe how magnets attract or repel each other and attract some materials and not others.</li> <li>• Compare and group together a variety of everyday materials on a basis of whether they are attracted to a magnet and identify some magnetic materials.</li> <li>• Describe magnets as having 2 poles</li> <li>• Predict whether 2 magnets will attract or repel each other,</li> </ul>	<p><b>Understanding plants</b></p> <ul style="list-style-type: none"> <li>• Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen</li> <li>• Identify and describe the basic structure of a variety of common flowering plants.</li> <li>• Identify and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers.</li> <li>• 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.</li> <li>• Investigate the way in which water is transported within plants.</li> </ul>

	<p>offspring vary and are not identical to their parents.</p> <ul style="list-style-type: none"> <li>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> </ul>	<p>depending on which poles are facing.</p> <ul style="list-style-type: none"> <li>Identify how sounds are made, associating some of them with something vibrating.</li> <li>Recognise that vibrations from sounds travel through a medium to the ear.</li> <li>Find patterns between the pitch of a sound and features of the object that produced it.</li> <li>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</li> <li>Recognise that sounds get fainter as the distance from the sound source increases.</li> </ul>	<ul style="list-style-type: none"> <li>Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> <li>Relate knowledge of plants to studies of evolution and inheritance.</li> <li>Relate knowledge of plants to studies of all living things</li> </ul>
	<p>permeable, impermeable, hard, soft, granite, limestone, slate, chalk, marble, sandstone, sedimentary, igneous, metamorphic, <b>force</b>, adaptation, palaeontologist, fossil, inherit, offspring, variation, characteristics</p>	<p>attract, repel, pole, friction, <b>force</b>, push, pull, magnetic, not magnetic, north pole, south pole, air resistance, water resistance, <b>gravity</b>, surface, vibration, pitch, volume, decibels, loudness, faintness</p>	<p>deciduous, evergreen, wild, cultivated, roots, stem/branch, flower, petal, seed, nutrients, pollen, sepal, filament, anther, ovule, ovary</p>
KS2 Year B	<p><b>Electricity</b> <b>Light</b></p> <ul style="list-style-type: none"> <li>Identify common appliances that run on electricity.</li> <li>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</li> <li>Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is</li> </ul>	<p><b>Earth and Space</b> <b>States of matter</b></p> <ul style="list-style-type: none"> <li>Compare and group materials together, according to whether they are solids, liquids or gases.</li> <li>Observe that some materials change state when they are heated or cooled, and measure the temperature at which this happens in degrees Celsius (°C), building on their teaching in mathematics.</li> </ul>	<p><b>Investigating living things</b> <b>Evolution and Inheritance</b></p> <ul style="list-style-type: none"> <li>Recognise that living things can be grouped in a variety of ways.</li> <li>Explore and use classification keys.</li> <li>Recognise that environments can change and that this can sometimes pose dangers to specific habitats.</li> <li>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</li> </ul>

	<p>part of a complete loop with a battery.</p> <ul style="list-style-type: none"> <li>• Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</li> <li>• Recognise some common conductors and insulators, and associate metals with being good conductors.</li> <li>• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</li> <li>• 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.</li> <li>• Use recognised symbols when representing a simple circuit in a diagram.</li> </ul> <ul style="list-style-type: none"> <li>• Recognise that they need light in order to see things and that dark is the absence of light.</li> <li>• Notice that light is reflected from surfaces.</li> <li>• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</li> <li>• Recognise that shadows are formed when the light from a light source is blocked by a solid object.</li> <li>• Find patterns in the way that the size of shadows change.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> <li>• Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>• Describe the movement of the Moon relative to the Earth.</li> <li>• Describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>• Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul>	<ul style="list-style-type: none"> <li>• Describe the life process of reproduction in some plants and animals.</li> <li>• Describe how living things are classified into broad groups according to common observable characteristics.</li> <li>• Give reasons for classifying plants and animals based on specific characteristics.</li> <li>• Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</li> <li>• Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> </ul>
--	--	---	--

	<ul style="list-style-type: none"> <li>• Understand that light appears to travel in straight lines.</li> <li>• Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eyes.</li> <li>• Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes.</li> <li>• 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.</li> </ul>		
	<p>electricity, <b>circuit</b>, battery, switch, cells, wires, bulbs, buzzers, voltage, amp, conductor, insulator, series, parallel, brightness, light source, reflect, shadow, transparent, opaque, surface, beam, mirrors, travel</p>	<p>solids, liquids, gases, evaporation, condensation, melting, temperature, water-cycle, heating, cooled, particles, reversible, irreversible, dissolve, solution, thermometer, solar system, moon, sun, planet, rotate, orbit, universe, international space station</p>	<p>classification, key, vertebrate, invertebrate, mammal, birds, reptile, fish, amphibian, life cycle, reproduce</p>

<p>KS2 Year C</p>	<p><b>Rocks and Soils</b></p> <p><b>Sound</b></p> <ul style="list-style-type: none"> <li>• Compare and group together different kinds of rocks on the basis of their simple, physical properties.</li> <li>• Relate the simple physical properties of some rocks to their formation (igneous or sedimentary).</li> <li>• Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.</li> <li>• Recognise that soils are made from rocks and organic matter.</li> <li>• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</li> </ul> <ul style="list-style-type: none"> <li>• Identify how sounds are made, associating some of them with something vibrating.</li> <li>• Recognise that vibrations from sounds travel through a medium to the ear.</li> <li>• Find patterns between the pitch of a sound and features of the object that produced it.</li> <li>• Find patterns between the volume of a sound and the strength of the vibrations that produced it.</li> <li>• Recognise that sounds get fainter as the distance from the sound source increases.</li> </ul>	<p><b>Force and magnets (cover levers and pulleys)</b></p> <ul style="list-style-type: none"> <li>• Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</li> <li>• Observe how magnets attract or repel each other and attract some materials and not others.</li> <li>• 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.</li> <li>• Describe magnets as having two poles.</li> <li>• Predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul> <ul style="list-style-type: none"> <li>• Describe magnets as having two poles.</li> <li>• Predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> <li>• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</li> <li>• Identify the effect of drag forces, such as air resistance, water resistance and friction that act between moving surfaces.</li> <li>• Understand that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> </ul>	<p><b>Understanding plants</b></p> <ul style="list-style-type: none"> <li>• Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen</li> <li>• Identify and describe the basic structure of a variety of common flowering plants.</li> <li>• Identify and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers.</li> <li>• 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.</li> <li>• Investigate the way in which water is transported within plants.</li> <li>• Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> <li>• Relate knowledge of plants to studies of evolution and inheritance.</li> <li>• Relate knowledge of plants to studies of all living thing</li> </ul>
-------------------	---	--	---

	permeable, impermeable, hard, soft, granite, limestone, slate, chalk, marble, sandstone, sedimentary, igneous, metamorphic, patterns, volume, strength, vibration, pitch, source, medium, tone, sound wave, volume, decibels, loudness, faintness	attract, repel, friction, push, pull, magnetic, not magnetic, north pole, south pole, metal, iron, gravity, resistance, force meter, newton metre	deciduous, evergreen, wild, cultivated, roots, stem/branch, flower, petal, seed, nutrients, pollen, sepal, filament, anther, ovule, ovary
KS2 Year D	<p><b>Electricity</b></p> <p><b>Light</b></p> <ul style="list-style-type: none"> <li>• Identify common appliances that run on electricity.</li> <li>• Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</li> <li>• 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.</li> <li>• Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</li> <li>• Recognise some common conductors and insulators, and associate metals with being good conductors.</li> <li>• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</li> <li>• Compare and give reasons for variations in how components function, including the brightness of bulbs, the</li> </ul>	<p><b>Earth and space</b></p> <p><b>States of matter</b></p> <ul style="list-style-type: none"> <li>• Compare and group materials together, according to whether they are solids, liquids or gases.</li> <li>• Observe that some materials change state when they are heated or cooled, and measure the temperature at which this happens in degrees Celsius (°C), building on their teaching in mathematics.</li> <li>• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> <li>• Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>• Describe the movement of the Moon relative to the Earth.</li> <li>• Describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>• Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul>	<p><b>Animal and Human Life Processes</b></p> <ul style="list-style-type: none"> <li>• Identify that animals, including humans, need the right types and amounts of nutrition, that they cannot make their own food and they get nutrition from what they eat.</li> <li>• Construct and interpret a variety of food chains, identifying producers, predators and prey.</li> <li>• Identify that humans and some animals have skeletons and muscles for support, protection and movement.</li> <li>• Describe the simple functions of the basic parts of the digestive system in humans.</li> <li>• Identify the different types of teeth in humans and their simple functions.</li> <li>• Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>• Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>• Describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul>

	<p>loudness of buzzers and the on/off position of switches.</p> <ul style="list-style-type: none"><li>• Use recognised symbols when representing a simple circuit in a diagram.</li><li>• Recognise that they need light in order to see things and that dark is the absence of light.</li><li>• Notice that light is reflected from surfaces.</li><li>• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</li><li>• Recognise that shadows are formed when the light from a light source is blocked by a solid object.</li><li>• Find patterns in the way that the size of shadows change.</li><li>• Understand that light appears to travel in straight lines.</li><li>• Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eyes.</li><li>• Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes.</li><li>• Explain that we see things because light travels from light sources to our</li></ul>		
--	--	--	--

	eyes or from light sources to objects and then to our eyes.		
	electricity, circuit, battery, switch, cells, wires, bulbs, buzzers, voltage, amp, conductor, insulator, series, parallel, brightness, light source, reflect, shadow, transparent, opaque, surface, beam, mirrors, travel	solids, liquids, gases, evaporation, condensation, melting, temperature, water-cycle, heating, cooled, particles, reversible, irreversible, dissolve, solution, thermometer, solar system, moon, sun, planet, rotate, orbit, universe, international space station	molar, incisor, canine, muscle, contract, relax, skeleton, balance diet, carbohydrate, protein, fat, sugar, producer, consumer, prey, predator, food chain, nutrition, digestion, circulation, heart, blood vessel, lung
KS2 Years A, B, C & D revisited objectives	<ul style="list-style-type: none"> <li>• Ask relevant questions.</li> <li>• Set up simple, practical enquiries and comparative and fair tests.</li> <li>• Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers.</li> <li>• Gather, record, classify and present data in a variety of ways to help in answering questions.</li> <li>• Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.</li> <li>• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</li> <li>• Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.</li> <li>• Identify differences, similarities or changes related to simple, scientific ideas and processes.</li> <li>• Use straightforward, scientific evidence to answer questions or to support their findings.</li> </ul>		<ul style="list-style-type: none"> <li>• Plan enquiries, including recognising and controlling variables where necessary.</li> <li>• Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work.</li> <li>• Take measurements, using a range of scientific equipment, with increasing accuracy and precision.</li> <li>• Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models.</li> <li>• Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions.</li> <li>• Present findings in written form, displays and other presentations.</li> <li>• Use test results to make predictions to set up further comparative and fair tests.</li> <li>• Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>

	22-36 months	30-50 months	40-60+ months	ELGs
Nursery/Reception	<p><b>P.S.E.D:</b> Expresses own preferences and interests.</p> <p><b>Understanding:</b> Developing understanding of simple concepts (e.g. big/little).</p> <p><b>Speaking:</b> Use a variety of questions (e.g. <i>what, where, who</i>).</p> <p><b>Moving and Handling:</b> Shows control in holding and using jugs to pour, hammers, books and mark-making tools.</p> <p><b>Understanding the World:</b> Learn they have similarities and differences that connect them to and distinguish them from, others. Notice detailed features of objects in their environment.</p> <p><b>E.A.D:</b> Experiment with blocks, marks and colours. Begin to use representation to communicate (e.g. drawing a line and saying, 'that's me.').</p>	<p><b>Understanding:</b> Build up vocabulary that reflects the breadth of their experience.</p> <p><b>Understanding the World:</b> Comment and ask questions about their familiar world such as the place where they live or the natural world.</p> <p><b>Speaking:</b> Question why things happen. Use talk to connect ideas, explain what is happening and anticipate what might happen next.</p> <p><b>Moving and Handling:</b> Use one-handed tools and equipment e.g. makes snips in paper with child scissors.</p> <p><b>P.S.E.D:</b> Can select and use resources with help.</p> <p><b>E.A.D:</b> Explore and learn how sounds can be changed. Explore colour and how colours can be changed. Realise tools can be used for a purpose.</p>	<p><b>Being imaginative:</b> Create simple representations of events, people and objects.</p> <p><b>Speaking:</b> Use talk to organise, sequence and clarify thinking, ideas and events.</p> <p><b>Understanding the World:</b> Look closely at similarities, differences, patterns and change.</p> <p><b>E.A.D:</b> Explore the different sounds of instruments, what happens when they mix colours and experiment to create different textures. Use simple tools and techniques competently and appropriately. Select appropriate resources and adapt work where necessary.</p>	<p><b>Speaking:</b> Develop own narratives and explanations by connecting ideas and events.</p> <p><b>Understanding:</b> Answer how and why questions about their experiences.</p> <p><b>Understanding the World:</b> Make observations of animals and plants and explain why some things occur and talk about changes. Know about similarities and differences in relation to places, objects, materials and living things.</p> <p><b>Moving and Handling:</b> Handle equipment and tools effectively.</p> <p><b>Self confidence and self awareness:</b> Choose the resources they need for their chosen activities.</p>

<b>Year Group</b>	<b>Asking questions and planning and setting up different types of enquiries</b>	<b>Performing tests (and using equipment)</b>	<b>Reporting, presenting and communicating data/findings</b>	<b>Observing and measuring and gathering and recording data</b>	<b>Identifying and classifying</b>
Year 1	Explore the world around them and raise their own simple questions. Ask people questions.	Experience different types of scientific enquires, including practical activities.	Use their observations and ideas to suggest answers to questions. Talk about what they have found out and how they found it out.	Observe closely using simple equipment with help, observe changes over time.	Use simple features; to compare objects, materials and living things and, with help, decide how to sort and group them.
Year 2	Begin to recognise different ways in which they might answer scientific questions. Ask people questions and use secondary sources to find answers.	Carry out simple tests. Begin to notice patterns and relationships (with guidance).	With help, record and communicate findings in a range of ways and begin to use simple scientific language.	Use simple measures and equipment (e.g. hand lenses, egg timers) to gather data. Record simple data	Begin to notice patterns and relationships (with guidance).
Year 3	Raise their own relevant questions about the world around them. Should be given a range of scientific experiences including different types of science enquiries to answer questions	Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them.	Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data. With help, pupils should look for changes, patterns, similarities and	Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.	

			<p>differences in their data in order to draw simple conclusions and answer questions. With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions.</p>		
Year 4	<p>Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions. Recognise when and how secondary sources might help them to answer questions that cannot be answered</p>	<p>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.</p>	<p>Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and</p>	<p>Take accurate measurements using standard units. Learn how to use a range of equipment accurately.</p>	<p>Talk about criteria for grouping, sorting and classifying and use simple keys.</p>

	through practical investigations.		conclusions. Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions. With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done.		
Year 5	Use science experiences to explore ideas and raise different kinds of questions. Talk about how scientific ideas have developed over time.		Look for different causal relationships in their data and identify evidence that refutes or supports their ideas. Decide how to record data and results of increasing complexity from a choice of	Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact. Make their own decisions about what observations to make,	Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment.

			<p>familiar approaches; scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Identify scientific evidence that has been used to support or refute ideas or arguments.</p>	<p>what measurements to use and how long to make them for.</p>	
Year 6	<p>Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions.</p>	<p>Recognise when and how to set up comparative and fair test and explain which variables need to be controlled and why.</p>	<p>Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas.</p> <p>Use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results.</p> <p>Use their results to make predictions and identify when further observations, comparative and fair test might be needed.</p>	<p>Choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately. Take repeat measurements where appropriate.</p>	

NB: Construction of Skills Ladder based upon information developed by the 'Centre for Industry Education Collaboration', (CIEC Department of Chemistry, University of York, York, YO10 5DD) – with support from the Salters Institute. [www.ciec.org.uk](http://www.ciec.org.uk)