



Science

The Federation of Nettlestone & Newchurch

Working Scientifically					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Planning					
<ul style="list-style-type: none"> I can explore the world around me and raise my own simple questions I can experience different types of scientific enquiry including different types of practical activities 		<ul style="list-style-type: none"> I can raise my own relevant questions about the world around me and use different types of scientific enquiries to answer them 		<ul style="list-style-type: none"> I can use my science experience to explore ideas and raise different types of questions I can talk about how scientific ideas have developed over time 	
<ul style="list-style-type: none"> I can begin to recognise different ways in which I might answer scientific questions 		<ul style="list-style-type: none"> I can start to make my own decisions about the most appropriate type of scientific enquiry to answer the question 		<ul style="list-style-type: none"> I can select and plan the most appropriate type of scientific enquiry to answer questions 	
<ul style="list-style-type: none"> I can carry out simple tests 		<ul style="list-style-type: none"> I can set up simple practical enquiries, comparative and fair tests I can recognise when a simple fair test is necessary and help to set it up 		<ul style="list-style-type: none"> I can recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why 	
<ul style="list-style-type: none"> I can use simple feature to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying) 		<ul style="list-style-type: none"> I can talk about criteria for grouping, sorting And classifying and use simple keys 		<ul style="list-style-type: none"> I can use and develop key and other information records to identify, classify and describe living things and materials I can identify patterns that might be found in the natural environment 	
<ul style="list-style-type: none"> I can ask people questions and use simple secondary sources to find answers 		<ul style="list-style-type: none"> I can recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations 		<ul style="list-style-type: none"> I can recognise which secondary sources will be most useful to research my ideas and begin to separate opinion and fact 	
Obtaining and Presenting Evidence					
<ul style="list-style-type: none"> I can, with help, observe closely using simple equipment I can, with help, observe changes over time 		<ul style="list-style-type: none"> I can make systematic and careful observations I can 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 		<ul style="list-style-type: none"> I can make my own decisions about what observations to make, what measurements to use and how long to make them for 	



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<ul style="list-style-type: none"> I can, with help, begin to notice patterns and relationships 	<ul style="list-style-type: none"> I can begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them 	<ul style="list-style-type: none"> I can look for different causal relationships in my data and identify evidence that refutes or supports my ideas
<ul style="list-style-type: none"> I can use simple measurements and equipment e.g. hand lenses, egg timers to gather data 	<ul style="list-style-type: none"> I can take accurate measurements using standard units, using a range of (new) equipment including thermometers 	<ul style="list-style-type: none"> I can choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately, taking repeat readings when appropriate.
<ul style="list-style-type: none"> I can record simple data 	<ul style="list-style-type: none"> I can gather, record, classify and present data from my observations and measurements in a variety of ways I can record my findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables I can help to make decisions about how to analyse this data 	<ul style="list-style-type: none"> I can decide how to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
Considering Evidence and Evaluating		
<ul style="list-style-type: none"> I can use my observations and ideas to suggest answers to questions I can talk about what I have found out and how I found it out 	<ul style="list-style-type: none"> I can, with help, look for changes, patterns, similarities and difference in my data in order to draw simple conclusions and answer questions 	<ul style="list-style-type: none"> I can identify scientific evidence that has been used to support or refute ideas or arguments.
<ul style="list-style-type: none"> I can, with help, begin to use simple scientific language I can, with help, record and communicate my findings in a range of ways 	<ul style="list-style-type: none"> I can use relevant simple scientific language to discuss my ideas I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. 	<ul style="list-style-type: none"> I can use relevant scientific language and illustrations to discuss, communicate and justify my scientific ideas I can use oral and written forms such as displays and other presentations to support conclusions, causal relationships and explanations of degree of trust in results
	<ul style="list-style-type: none"> I can, with help, identify new questions arising from the data, make predictions for new values within or beyond the data I have collected and find ways of improving what I have already done 	<ul style="list-style-type: none"> I can use my results to make predictions and identify when further observations, comparative and fair tests might be needed



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Knowledge					
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Seasonal changes					
<p>I can observe changes across the four seasons.</p> <p>I can observe and describe weather associated with the four seasons and how the day varies.</p> <p>Challenge: Can they observe features in the environment and explain that these are related to a specific season?</p> <p>Can they observe and talk about changes in the weather?</p> <p>Can they talk about weather variation in different parts of the world?</p>					
Plants					
<p>I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>I can identify and describe the basic structure of a</p>	<p>I know that all flowering plants make seeds that grow into a new plant.</p> <p>I understand that sometimes the plant dies after it has produced its seed and sometime the</p>	<p>I can identify and describe the functions of different parts of flowering plants; roots, stem/trunk, leaves and flowers.</p> <p>I can explain the requirement of plants for</p>			



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<p>variety of common flowering plants - including trees.</p> <p>I can observe and describe how seeds and bulbs grow into mature plants.</p> <p><i>Challenge:</i> Can they name the main parts of a flowering plant?</p>	<p>plant lives for many generations, producing seeds every year.</p> <p>I can describe the life cycle of a variety of different plants.</p> <p><i>Challenge:</i> Can they explain that plants grow and reproduce in different ways?</p>	<p>life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.</p> <p>I can investigate the way in which water is transported within plants.</p> <p>I can explain the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p><i>Challenge:</i> Can they classify a range of common plants according to many criteria (environment found, size, climate required, etc.)?</p>			
Animals including humans					
<p>I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <p>I can identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p>	<p>I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</p> <p>I can describe how animals obtain their food from plants (herbivores) and other animals (carnivores),</p>	<p>I can identify that animals, including humans, need the right types and amount of nutrition.</p> <p>I know that animals, including humans, cannot make their own food; they get nutrition from what they eat.</p>	<p>I can describe the simple functions of the basic parts of the digestive system in humans.</p> <p>I can identify the different types of teeth in humans and their simple functions.</p> <p>I can construct and interpret a variety of food</p>	<p>I can describe the changes as humans develop to old age.</p>	<p>I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>I can recognise the impact of diet, exercise, drugs and lifestyle on the way my body functions.</p>



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<p>I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).</p> <p>I can identify, name, draw and label the basic parts of the human body.</p> <p>I can say which part of the body is associated with each sense.</p> <p><i>Challenge:</i> Can they begin to classify animals according to a number of given criteria?</p> <p><i>Can they point out differences between living things and non-living things?</i></p>	<p>using the idea of a simple food chain.</p> <p>I can identify and name different sources of food.</p> <p>I know that animals move in different ways depending on whether they are a predator or prey.</p> <p>I understand that animals sense their surroundings and that they have different ways of avoiding being eaten (camouflage, protection, moving away quickly etc).</p> <p>I can describe why exercise, balanced diet and hygiene are important for humans.</p> <p>I can describe the life cycle of a variety of different animals.</p> <p>I know that different animals live for different lengths of time.</p> <p>I know that different animals reach different</p>	<p>I can identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p><i>Challenge:</i> Can they classify living things and non-living things by a number of characteristics that they have thought of?</p> <p><i>Can they explain how certain living things depend on one another to survive?</i></p>	<p>chains, identifying producers, predators and prey.</p> <p><i>Challenge:</i> Can they explain how certain living things depend on one another to survive</p>		<p>I can describe the ways in which nutrients and water are transported within animals, including humans.</p> <p><i>Challenge:</i> Can they explore the work of medical pioneers, for example, William Harvey and Galen and recognise how much we have learnt about our bodies?</p>
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	sizes before they are able to reproduce.				
Living things and their habitats					
	<p>I can explore and compare the differences between things that are living, dead and things that have never been alive.</p> <p>I can identify that most living things live in habitats to which they are suited.</p> <p>I can 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>I can identify and name a variety of plants and animals in their habitats, including micro-habitats.</p> <p>Challenge: Can they begin to suggest how animals adapt to their habitat?</p>		<p>I can recognise that living things can be grouped in a variety of ways.</p> <p>I can explore and use a classification key to group, identify and name a variety of living things in the local and wider environment.</p> <p>I can recognise that environments can change and that this can sometimes pose a danger to living things.</p> <p>Challenge: Can they give reasons for how they have classified animals and plants, using their characteristics and how they are suited to their environment?</p> <p>Can they explore the work of pioneers in classification? (e.g. Carl Linnaeus)</p> <p>Can they name and group a variety of living things</p>	<p>I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>I can describe the life processes of reproduction in some plants and animals.</p> <p>Challenge: Can they compare the life cycles of plants and animals in their local environment with the life cycles of those around the world, e.g. rainforests?</p>	<p>I can 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>I can give reasons for classifying plants and animals based on specific characteristics.</p> <p>Challenge: Can they sub divide their original groupings and explain their divisions?</p> <p>Can they find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification?</p>



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			based on feeding patterns? (producer, consumer, predator, prey, herbivore, carnivore, omnivore)		
Evolution and Inheritance					
					<p>I can 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>I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p><i>Challenge:</i> Can they talk about the work of Charles Darwin, Mary Anning and Alfred Wallace?</p>



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					Can they explain how some living things adapt to survive in extreme conditions? Can they begin to understand what is meant by DNA?
Materials					
<p><u>Everyday Materials:</u> I can distinguish between an object and the material from which it is made.</p> <p>I can identify and name a variety of everyday materials? e.g. wood, plastic, metal, water and rock.</p> <p>I can describe the simple properties of a variety of everyday materials.</p> <p>I can compare and group together a variety of everyday materials on the basis of their simple physical properties.</p> <p><i>Challenge:</i> Can they describe some of the effects of plastic pollution on the environment?</p>	<p><u>Uses of everyday materials (Fabric, plastic, wood and metals):</u> I know that different materials have different describable and measurable properties.</p> <p>I know that the properties of materials determine whether they are suitable for different purposes.</p> <p><i>Challenge:</i> Can they describe the properties of different materials using words like transparent or opaque, flexible, etc.?</p> <p>Can they sort materials into groups and say why they have sorted them in that way?</p>	<p><u>Rocks:</u> I can compare and group together different rocks on the basis of their appearance and simple physical properties.</p> <p>I can describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>I can recognise that soils are made from rocks and organic matter.</p> <p><i>Challenge:</i> Can they classify igneous and sedimentary rocks?</p> <p>Can they begin to relate the properties of rocks with their uses?</p>	<p><u>States of matter:</u> I can compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>I can observe that some materials change state when they are heated or cooled.</p> <p>I can measure or research the temperature at which different materials change state in degrees Celsius (°C)</p> <p>I can identify the part that evaporation and condensation has in the water cycle.</p> <p>I can associate the rate of evaporation with temperature.</p> <p><i>Challenge:</i></p>	<p><u>Properties and changes to materials:</u> I can compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</p> <p>I know that some materials dissolve in liquid to form a solution.</p> <p>I can describe how to recover a substance from a solution.</p> <p>I can use my knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving, evaporating.</p>	



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	<p>Can they say which materials are natural and which are man-made?</p>		<p>Can they group and classify a variety of materials according to the impact of temperature on them?</p>	<p>I can give reasons, based on evidence for comparative and fair tests for the particular uses of everyday materials, including metals wood and plastic.</p> <p>I can demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>I can 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> <p><i>Challenge</i> Can they explore changes that are difficult to reverse, e.g. burning, rusting and reactions such as vinegar with bicarbonate of soda? Can they explore the work of chemists who created new materials, e.g. Spencer Silver (glue on sticky notes) or Ruth Benerito (wrinkle free cotton)?</p>	
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Forces					
	<p><u>Pushes, pulls and their effects:</u> I know that objects move in different ways; they roll, slide, bounce etc.</p> <p>I understand that I can change the way an object moves by pushing or pulling it. Sometimes this speeds it up, sometimes it slows it down and sometimes it makes it change direction. Bigger pushes and pulls have bigger effects.</p> <p>I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p><u>Forces and magnets:</u> I can compare how things move on different surfaces.</p> <p>I can notice that some forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>I can observe how magnets attract or repel each other. I can observe how magnets attract some materials and not others.</p> <p>I can describe magnets as having two poles (N and S)</p> <p>I can predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>I can compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet or not.</p> <p>I can identify some magnetic materials.</p>		<p><u>Forces:</u> I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>I can identify the effects of air resistance, water resistance and friction that act between moving surfaces.</p> <p>I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <p><i>Challenge:</i> Can they work out how water can cause resistance to floating objects?</p> <p>Can they explore how scientists, such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation?</p>	



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Light and Sound					
		<p>Light: I can recognise that they need light in order to see things and that dark is the absence of light.</p> <p>I can notice that light is reflected from surfaces.</p> <p>I can recognise that light from the sun can be dangerous and that there are ways to protect my eyes.</p> <p>I can recognise that shadows are formed when the light from a light source is blocked by a solid object.</p> <p>I can find patterns in the way that the size of shadows change.</p> <p>Challenge: Can they explain the difference between transparent, translucent and opaque?</p> <p>Can they explain why their shadow changes when the light source is moved closer</p>	<p>Sound: I can identify how sounds are made associating some of them with something vibrating.</p> <p>I can recognise that vibrations from sound travel through a medium to the ear.</p> <p>I can find patterns between the pitch of a sound and features of the object that produce it.</p> <p>I can find patterns between the volume of the sound and the strength of the vibrations that produced it.</p> <p>I can recognise that sounds get fainter as the distance from the sound source increases.</p> <p>Challenge: Can they work out which materials give the best insulation for sound?</p>		<p>Light: I can 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>I can 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>I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p> <p>Challenge Can they use and explain how simple optical instruments work? (periscope, telescope, binoculars, mirror, magnifying glass, Newton's first reflecting telescope)</p> <p>Can they explore a range of phenomena, including rainbows, colours on soap bubbles, objects looking</p>



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		or further from the object?			bent in water and coloured filters.
Electricity					
			<p>I can identify common appliances that run on electricity.</p> <p>I can construct a simple series electric circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>I can 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>I can 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>I can recognise some common conductors and insulators and associate metals with being good conductors.</p>		<p>I can 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>I can compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers, the on/off position of switches.</p> <p>I can use recognised symbols when representing a simple circuit in a diagram.</p> <p><i>Challenge:</i> Can they make their own traffic light system or something similar?</p>



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			<p>Challenge: Can they explain how a bulb might get lighter?</p> <p>Can they explain why cautions are necessary for working safely with electricity?</p>	
Earth and Space				
				<p>I can describe the movement of the Earth and other planets relative to the sun in the solar system.</p> <p>I can describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>I can 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>Challenge: Can they compare the time of day at different places on the earth?</p>