

Our Lady Star of the Sea Science Programme of study (PoS) Year 6

Electricity	Living Things
<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 recognized symbols (at least: cells, wires, switches, bulbs, buzzers and motors) when representing a simple circuit in a diagram.</p> <p>Use/interpret circuit diagrams to construct a variety of more complex circuits predicting whether they will 'work'.</p>	<p>Classification</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>Living things can be grouped into micro-organisms, plants and animals.</p> <p>Vertebrates can be grouped as fish, amphibians, reptiles, birds and mammals.</p> <p>Invertebrates can be grouped as snails and slugs, worms, spiders and insects.</p> <p>Plants can be grouped as flowering plants (incl. trees and grasses) and non-flowering plants (such as ferns and mosses).</p> <p><i>Find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.</i></p>
Materials	
<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>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic (advantages and disadvantages).</p> <p>Compare a variety of materials and measure their effectiveness (e.g. hardness, strength, flexibility, solubility, transparency, thermal conductivity, electrical conductivity).</p> <p>Temperature and Thermal Insulation</p> <p>Heat always moves from hot to cold.</p> <p>Some materials (insulators) are better at slowing down the movement of heat than others.</p> <p>Objects/liquids will warm up or cool down until they reach the temperature of their surroundings.</p>	<p><i>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</i></p> <p><i>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</i></p> <p><i>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</i></p> <p><i>Find out about the work of paleontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.</i></p> <p>Observing Life Cycles</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>Name, locate and describe the functions of the main parts of reproductive system of plants (stigma, stamen, petal, sepal, pollen, ovary)</p> <p>Find out about the work of naturalists and animal behaviorists, for example, David Attenborough and Jane Goodall.</p> <p>Find out about different types of reproduction, including sexual and asexual reproduction in plants and sexual reproduction in animals.</p> <p>Human Life Cycles</p> <p>Describe the changes as humans develop to old age.</p> <p>Animals are alive; they move, feed, grow, use their senses, reproduce, breathe/respire and excrete.</p> <p>Draw a timeline to indicate stages in the growth and development of humans.</p> <p>learn about the changes experienced in puberty. (Growing up talks with the nurse)</p>

Our Lady Star of the Sea SCIENCE KEY SKILLS YEAR 6

	Exploring and observing	Grouping and classifying	Questioning	Research	Modelling	Collaborating
	<p><i>UKS2 - developing a deeper understanding of a wide range of scientific ideas and encountering more abstract ideas</i></p> <p><i>LKS2 - developing their own ideas and their understanding of the world around them</i></p>	<p><i>UKS2 - Compare and contrast a variety of examples linked to UKS2 PoS</i></p> <p><i>LKS2 - Compare and contrast a variety of examples linked to LKS2 PoS</i></p>	<p><i>UKS2 - asking their own questions about scientific phenomena</i></p> <p><i>LKS2 - asking relevant questions</i></p>	<p><i>UKS2 – summarise research from a wide variety of sources and recognising that scientific ideas change and develop over time</i></p> <p><i>LKS2 - finding things out using a wide range of secondary sources of information</i></p>	<p><i>using dance, drama or a visual aid to represent science in the real world</i></p>	<p><i>interacting effectively as part of a group</i></p>
Year 6	<p>Use correct scientific knowledge and understanding and relevant scientific language to discuss their observations and explorations (linked to Y6 PoS)</p> <p>Identify changes that have occurred over a very long period of time (evolution) and discuss how changes have impacted the world</p> <p>Explore more abstract systems / functions / changes / behaviours and record their understanding of these</p>	<p>Recognise the importance of classification to the scientific world and form a conclusion from their sorting and classifying</p> <p>Compare and contrast more complex processes, systems, functions (e.g. sexual and asexual reproduction)</p> <p>Construct a classification key / branching database using more than two items</p> <p>Compare and contrast things beyond their locality and discuss advantages/disadvantages, pros/cons of the similarities and differences</p> <p>Use <i>research*</i> to identify and classify things</p> <p>Use classification systems, keys and other information records [databases] to help classify or identify things.</p>	<p>Recognise scientific questions that do not yet have definitive answers (linked to Y6 PoS)</p> <p>Refine a scientific question to make it testable</p> <p>i.e. Ask a testable question which includes the change and measure variables - e.g. <i>what would happen to ... if we changed ...?</i></p> <p>e.g. <i>What affect would we have on ... if we ...?</i></p> <p>e.g. <i>How would exercise affect the pulse rate?</i></p> <p>Use observations to suggest a further (testable or research) question.</p> <p>Independently ask a variety of scientific questions and decide the type of enquiry needed to answer them</p>	<p>Research how scientific ideas have developed over time and had an impact on our lives.</p> <p>Use evidence from a variety of sources to justify their ideas</p> <p>Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact.</p> <p>Interview people to find out information</p>	<p>Make / perform and use their own versions of simple models to describe and explain scientific ideas</p> <p>(e.g. circulatory system drama, periscopes to explain how light travels, burglar alarm to explain components in a circuit)</p>	<p>Propose their own ideas and make decisions with agreement in a group</p> <p>Support, listen to and acknowledge others in the group</p> <p>Check the clarity of each other's suggestions</p> <p>Build on / add to someone else's idea to improve a plan or suggestion</p> <p>Understand that it is okay to disagree with their peers and offer a reasons for their opinion</p>
Year 5	<p>Use their developing scientific knowledge and understanding and relevant scientific language and terminology to discuss, communicate and explain their observations (incl. more abstract ideas from Y5 PoS (e.g. friction, air resistance, forces, Earth and space, reversible and irreversible changes).</p> <p>Evaluate their observations and suggest a further test, offer another question or make a prediction</p> <p>Observe (including changes over time) and suggest a reason for what they notice</p>	<p>Suggest reasons for similarities and differences</p> <p>Compare and contrast things beyond their locality and use these similarities and differences to help to classify</p> <p><i>(melting compared with dissolving, etc).</i></p> <p>Use secondary sources of information to identify and classify.</p> <p>Decide which sources of information (and/or equipment and/or test) to help identify and classify</p>	<p>Recognise scientific questions that do not yet have definitive answers. (linked to Y5 PoS)</p> <p>Refine a scientific question so that it can be tested e.g. 'What would happen to... if we changed...?'</p> <p>Decide whether their questions can be answered by researching or by testing</p> <p>Independently ask their own scientific questions taking some ownership for finding out the answers</p>	<p>Find out how scientific ideas have changed/ developed over time (linked to Y5 PoS)</p> <p>Articulate and explain findings from their research using scientific knowledge and understanding</p> <p>Make decisions about which information to use from a wide range of sources</p>	<p>Perform / create simple models to exemplify scientific ideas using scientific terminology where appropriate</p> <p><i>simple lever and pulley mechanisms</i></p> <p><i>Models for the solar system</i></p> <p><i>Day and night models</i></p>	<p>Propose their own ideas and make decisions with agreement in a group</p> <p>Support, listen to and acknowledge others in the group e.g. Yes. I prefer that one too</p> <p>Check the clarity of each other's suggestions e.g. are you saying you think this one is a herbivore?</p> <p>Build on / add to someone else's idea to improve a plan or suggestion</p> <p>Understand that it is okay to disagree with their peers and offer a reasons for their opinion</p>
Year 4	<p>Suggest their own ideas on a concept and compare these with what they observe / find out.</p> <p>Use observations to suggest what to do next</p> <p>Discuss ideas and develop descriptions from their observations using relevant scientific language and vocabulary (from Y4 PoS)</p> <p>Observe and record relationships between structure and function or between different parts of a processes (linked to Y4 PoS)</p> <p>Observe and record changes /stages over time (linked to Y4 PoS)</p>	<p>Make a simple guide to local living things.</p> <p>Use guides or simple keys to classify / identify [animals, flowering plants and non-flowering plants].</p> <p>Use their observations to identify and classify</p> <p>Begin to give reasons for these similarities and differences.</p> <p>Record similarities as well as differences and/or changes related to simple scientific ideas or processes or more complex groups of objects/living things/ events</p> <p><i>(e.g. evaporation and condensation, different food chains, different electrical circuits)</i></p>	<p>Ask/raise their own relevant questions with increasing confidence and independence that can be explored, observed, tested or investigated further</p> <p>Ask questions such as 'What will happen if...?'" or 'What if we changed...?' (linked with Y4 PoS)</p> <p>Choose/select a relevant question that can be answered [by research or experiment / test].</p> <p><i>(e.g. evaporation and condensation, different food chains, different electrical circuits)</i></p>	<p>Make decisions about which information to use from a wide range of sources and make decisions about how to present their research</p> <p>Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.</p>	<p>Make a visual representation or a model of something to represent something they have seen or a process that is difficult to see.</p> <p>Suggest their own ideas on a concept and compare these with models or images.</p>	<p>Make some decisions about an idea within a group <i>(e.g. I think we should find out by testing...)</i></p> <p>Increasingly support, listen to and acknowledge others in the group</p> <p>Build on / add to someone else's idea to improve a plan.</p> <p>Understand that it is okay to disagree with their peers and offer reasons for their opinion</p>

	Planning and testing	Using equipment and measure	Communicating	Describing results and looking for patterns	Explaining Results	Trusting Results
	<p>UKS2 - using different types of scientific enquiry making decisions about and explaining choices for testing</p> <p>LKS2 - making decisions about and setting up simple practical enquiries, comparative tests and fair tests</p>	<p>UKS2 - increasing complexity and increasing accuracy and precision</p> <p>make their own decisions about the data to collect</p> <p>LKS2 - making accurate measurements and gathering data</p>	<p>Reporting findings, recording data, presenting findings</p> <p>Read, spell and pronounce scientific vocabulary correctly linked to the relevant Yr Grp</p>	<p>UKS2 - Looking for patterns analysing functions, relationships and interactions more systematically</p> <p>LKS2 - Describing their findings/ results</p>	<p>UKS2 - draw conclusions based on / supported by evidence</p> <p>LKS2 - reporting on findings saying why something happened</p>	<p>UKS2 - comment on how reliable the data is</p> <p>LKS2 - suggest improvements for further tests</p>
Year 6	<p>Predict what a graph might look like before collecting results</p> <p>Make a hypothesis where they say how one thing will affect another and give a reason for their suggestion with a developing understanding of the scientific concept</p> <p>Identify variables to change, measure and keep the same in order for a test to be fair</p> <p>Independently plan investigations and explain planning decisions</p> <p>Decide when it is appropriate to carry out a fair test investigation, comparative test or alternative</p>	<p>Decide whether to repeat any readings and justify the reason for doing so</p> <p>Make their own decisions about what measurements to take (and begin to identify the ranges used).</p> <p>Make, and act on, suggestions to control/reduce risks to themselves & others</p> <p>Use equipment fit for purpose to take measurements which are increasingly accurate and precise</p> <p>Decide the most appropriate equipment to use to collect data</p>	<p>Articulate understanding of the concept using scientific language and terminology when describing abstract ideas, observations and findings (linked to the Y6 PoS)</p> <p>Record data and results of increasing complexity using scientific diagrams and labels, recognised symbols, classification keys, tables, bar and line graphs, and models.</p> <p>Make decisions about how to present and explain their findings through talk, in written forms or in other ways (e.g. using technology)</p>	<p>Spot unexpected results that do not fit the pattern (anomalies)</p> <p>Identify patterns in results collected and describe them using the change and measure variables (causal relationships)</p> <p>(e.g. as we <i>increased the number of batteries the brightness the bulb increased</i>)</p>	<p>Identify evidence that refutes or supports their ideas</p> <p>Independently form a conclusion which draws on the evidence from the test (linked to Y6 PoS)</p> <p>Use scientific language and terminology (linked to Y6 PoS) to explain why something happened</p>	<p>Be able to suggest reasons for unexpected results (anomalies)</p> <p>Describe how to improve planning to produce more reliable results</p> <p>Say how confident they are that their results are reliable and give a reason</p>
Year 5	<p>Carry our fair tests and other investigations with increasing independence</p> <p>Suggest more than one possible prediction and begin to suggest which is the most likely.</p> <p>Justify their reason with some knowledge and understanding of the scientific concept</p> <p>Make decisions about which variables to change, measure and keep the same (linked to the appropriate units in the Y5 PoS)</p> <p>Make most of the planning decisions for an investigation.</p> <p>Recognise when it is appropriate to carry out a fair test.</p>	<p>Make their own decisions about what observations to make or measurements to use and how long to take them for (recognising the need for repeat readings on some occasions).</p> <p>Take measurements using a range of scientific equipment with increasing accuracy and using more complex scales / units</p> <p>Identify possible risks to themselves and others and suggest ways of reducing these</p> <p>Choose the most appropriate equipment and make accurate measurements</p>	<p>Use their developing scientific knowledge and understanding and relevant scientific language and terminology to communicate more abstract concepts (linked to Y5 PoS)</p> <p>Present and explain their findings through talk, in written forms or in other ways (e.g. using technology) for a range of audiences / purposes</p> <p>Record data and results of increasing complexity using different formats e.g. tables, annotated scientific diagrams, classification keys, graphs and models</p> <p>Make decisions about the most appropriate way of recording data</p>	<p>Describe straightforward patterns in results linking cause and effect e.g. using er...er or the word 'more'</p> <p>(e.g. <i>the longer, thinner shapes move through the water more quickly OR the larger the wings, the longer it takes the spinner to fall</i>)</p> <p>Look for / notice relationships between things and begin to describe these.</p> <p>Comment on the results and whether they support the initial prediction</p>	<p>Use their scientific K&U and appropriate scientific language and terminology (linked to Y5 PoS) to explain their findings and data and answer their initial question</p> <p>Draw a valid conclusion (explain <i>why</i> it happened) based on their data and observations (from Y5 PoS)</p>	<p>Begin to recognise how repeated readings improve the reliability of results</p> <p>Compare results with others and comment on how reliable they are</p>
Year 4	<p>Carry out simple fair tests with increasing confidence investigating the effect of something on something else (linked to Y4 PoS).</p> <p>Start to make their own decisions about the most appropriate type of science enquiry they might use to answer scientific questions (<i>is a fair test the best way to investigate their question?</i>)</p> <p>Make a prediction based on the knowledge acquired from previous explorations / observations and apply it to a new situation</p> <p>Explain their planning decisions and choices</p> <p>Make some of the planning decisions about what to change and measure/observe.</p> <p>Begin to recognise when a fair test is necessary.</p>	<p>Begin to identify where patterns might be found and use this to begin to identify what data to collect</p> <p>Make more of the decisions about what observations to make, how long to make them for and the type of equipment that might be used.</p> <p>Recognise obvious risks and how to keep themselves and others safe</p> <p>Learn how to use new equipment, such as data loggers & measure temperature in degrees Celsius (°C) using a thermometer.</p> <p>Collect data from their own observations and measurements, using notes/simple tables/standard units</p> <p>Make accurate measurements using standard units [and more complex units and parts of units] using a range of equipment and scales</p>	<p>Record findings using relevant scientific language and vocabulary (from Y4 PoS), including discussions, oral and written explanations, notes, drawings (annotated), pictorial representations, labelled diagrams, tables and bar charts [where intervals and ranges agreed through discussion], displays or presentations</p> <p>Begin to select the most useful ways to collect, record, classify and present data from a range of choices</p> <p>Make decisions on how best to communicate their findings in ways that are appropriate for different audiences</p>	<p>Notice/find patterns in their observations and data.</p> <p>(Describe the effect of something on something else)</p> <p>(e.g. <i>as I lengthen the ruler I notice that the pitch gets lower</i>)</p> <p>With some independence, analyse results / observations by writing a sentence that matches the evidence</p> <p>i.e. deciding the important aspect of the result and summarising in a conclusion (e.g. <i>metals tend to be good conductors of electricity</i>)</p>	<p>Begin to develop their ideas about relationships and interactions between things and explain them</p> <p>Use relevant scientific language and vocabulary (from Y4 PoS) to begin to say/explain <i>why</i> something happened</p>	<p>Use results to suggest improvements, new questions and/or predictions for setting up further tests</p> <p>Compare their results with others and give reasons why results might be different</p>