**Science Skills and Knowledge Progressions for Year 6**

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| **Skills Objectives** | Topic covered in  | Pupils Working Towards Expectations | Pupils Exceeding Expectations |
| Observe and explain | - use correct scientific language and knowledge to explain their observations including for abstract systems and functions (e.g. relationship between diet and exercise)- understand and explain changes over a long period of time (e.g. evolution) |  |  |  |
| Grouping and classifying | - Compare and contrast more complex processes and functions (e.g. function of large vs. small intestine)- Research to identify and classify things- Use classification keys to help classify and identify things- Construct a classification key |  |  |  |
| Questioning | -Recognise that some scientific questions do not yet have definitive answers (extinction of dinosaurs, size of universe)-Ask a variety of questions and decide how best to answer these questions e.g. research or test- Refine a scientific question to make it testable |  |  |  |
| Planning and predict | -Make a hypothesis and give a reason based on sound scientific understanding-Identify variables to change, measure and keep the same in order for a test to be fair.-Independently plan investigations and explain decisions. -Predict what a graph might look like before collecting results |  |  |  |
| Test and use equipment | -Carry out a fair test with independence- Make their own decisions about the most appropriate type of equipment and what measurements to take -Take accurate measurements using a range of scientific equipment, with increasing accuracy and with a variety of scales-Identify, and act on, ways to reduce risk-Decide whether to repeat any readings and justify their reasons |  |  |  |
| Reporting and recording | -Articulate understanding of concepts using scientific language (from Year 6 PoS).-Record data and results of increasing complexity using different formats e.g. tables, annotated scientific diagrams, classification keys, line graphs, bar graphs. Some of these should be produced using ICT.-Explain the most appropriate way for recording data.  |  |  |  |
| Analysing and explaining results | -Identify patterns in results and describe them (e.g. as we increased the number of batteries, the brightness of the bulb increased).-Spot unexpected results which did not fit the pattern (anomalies). Suggest possible reasons for them.-Independently form a conclusion which draws on the evidence and discuss whether it matched their prediction. Make suggestions about why if it did not match.-Using their scientific knowledge and terminology, write an explanation of why something happened. |  |  |  |
| Evaluating | -Discuss the reliability of their results. Begin to recognise how repeated readings improve the reliability of results.-Compare results with others and comment how reliable they are.-Use results to suggest improvements to make it more reliable- Suggest new questions and/or predictions for further tests. |  |  |  |

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| **Knowledge Objectives** | Topic covered in  | Pupils Working Towards Expectations | Pupils Exceeding Expectations |
| Living things and their habitats |  - 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 - give reasons for classifying plants and animals based on specific characteristics. |  |  |  |
| Animals including humans | - identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood * recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
* describe the ways in which nutrients and water are transported within animals, including humans.
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| Evolution and Inheritance | -recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago -recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents -identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. |  |  |  |
| Light | -recognise that light appears to travel in straight lines -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 -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 -use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. |  |  |  |
| Electricity | -associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit -compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches -use recognised symbols when representing a simple circuit in a diagram. |  |  |  |