

**Welbourn C of E Primary School**

‘Believe, Excite, Succeed, Together’

Year 5/6 Science Long Term Plan

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| Cycle A | Autumn | Spring | | Summer | |
| Science POS | ***Scientific knowledge:*** *It is vitally important that children develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. This allows children to avoid misconceptions and access higher-order content.*  ***Working scientifically****: Developing skills checking on pupils’ ability to, amongst other things, carry out research, ask questions and carry out tests.*  ***Working scientifically methods:*** *These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data.* | ***Scientific knowledge:*** *It is vitally important that children develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. This allows children to avoid misconceptions and access higher-order content.*  ***Working scientifically****: Developing skills checking on pupils’ ability to, amongst other things, carry out research, ask questions and carry out tests.*  ***Working scientifically methods:*** *These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data.* | | ***Scientific knowledge:*** *It is vitally important that children develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. This allows children to avoid misconceptions and access higher-order content.*  ***Working scientifically****: Developing skills checking on pupils’ ability to, amongst other things, carry out research, ask questions and carry out tests.*  ***Working scientifically methods:*** *These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data.* | |
| Key objectives | Chemistry | Biology | Physics | Physics | Biology |
| Topic | **Properties and changes in Materials**  **(yr5)** | **Living things and their habitats/ Classification**  **(yr6)** | **Light**  **(Yr 6)** | **Forces (Y5)** | **Animals including humans**  **(Yr 6)** |
| Science knowledge | To 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.  To know that some materials will dissolve in liquid to form a solution.  To know and explain how to recover a substance from a solution.  To Know and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating)  To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.  To know and demonstrate that dissolving, mixing and changes of state are reversible changes.  To know and 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. | To classify living things into broad groups according to observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.  To know how living things have been classified.  To give reasons for classifying plants and animals in a specific way | To recognise that light appears to travel in straight lines  To 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.  To 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.  To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. | To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.  To identify the effects of air resistance, water resistance and friction, that act between moving surfaces  To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. | To identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.  To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.  To describe the ways in which nutrients and water are transported within animals, including humans. |
| Working scientifically skills | To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.  To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate  To record data and results of increasing complexity using scientific diagrams and labels, tables, scatter graphs, bar and line graphs  To use test results to make predictions to set up further comparative and fair tests  To report and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.  To identify scientific evidence that has been used to support or refute ideas or arguments. | To identify scientific evidence that has been used to support or refute ideas or arguments.  To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.  To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.  To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.  To use test results to make predictions to set up further comparative and fair tests | To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.  To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.  To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.  To use test results to make predictions to set up further comparative and fair tests  To report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.  To identify scientific evidence that has been used to support or refute ideas or arguments. | To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.  To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.  To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.  To use test results to make predictions to set up further comparative and fair tests |
| Working scientifically methods | Observing changes over different periods of time,  Noticing patterns  Grouping and classifying things  Carrying out comparative and fair tests  Finding things out using a wide range of secondary sources. | Observing changes over different periods of time,  Noticing patterns  Grouping and classifying things  Carrying out comparative and fair tests  Finding things out using a wide range of secondary sources | Observing changes over different periods of time,  Noticing patterns  Grouping and classifying things  Carrying out comparative and fair tests  Finding things out using a wide range of secondary sources. | Observing changes over different periods of time  Noticing patterns  Grouping and classifying things  Carrying out comparative and fair tests  Finding things out using a wide range of secondary sources | Observing changes over different periods of time,  Noticing patterns  Grouping and classifying things  Carrying out comparative and fair tests  Finding things out using a wide range of secondary sources |
| Working scientifically ongoing | Asking their own questions about scientific phenomena  Draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. | | | | |
| Key vocabulary | Materials  Elastic  Waterproof  Opaque  Translucent  Transparent  Flexible  Rigid  Absorbent  Magnetic  Brittle  Thermal conductor  Thermal insulator  Dissolve  Insoluble  Suspension  Chemical  Physical  Irreversible  Solution  Separate  Permeable  Soluble  filter | Micro-organisms  Organism  Characteristics  Plants  Animal  Classification  Compare  Invertebrates  Insects  Vertebrates  Amphibians  Reptiles  Birds  Mammals  Carl Linnaeus  Linnaean  Domain  Kingdom  Phylum  Genus  Species | Shadow  Light  Filter  Colour  Reflect  Absorb  Refract  Spectrum  Wavelength  Prism  Visible  Lens  Angle  Incidence  Straight  Ray  Beam  Wave  Photon  Energy  Source  Opaque  Distant  Transparent  Bend  Focal point  Periscope  Vacuum  travel | Force  Push  Pull  Opposing  Gravity  Air resistance  Water resistance  Friction  Isaac Newton  Galileo Galilei  Streamline  Brake  Mechanism  Lever  Gear  Cog  Pulley  machine | Circulatory system  Heart  Blood vessels  Artery  Lungs  Vein  Pulmonary  Alveoli  Capillary  Digestive  Transport  Gas exchange  Villi  Nutrients  Water  Oxygen  Alcohol  Drugs  Tobacco |