

**Welbourn C of E Primary School**

‘Believe, Excite, Succeed, Together’

Year 4/5/6 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 | Physics | Biology | Biology | Biology |
| Topic | Properties and changes in Materials  (yr5) | Earth and Space  (yr5) | Living things and their habitats  (yr5) | All Living things and their habitats/ Classification  (yr6) | Evolution and Inheritance  (yr6) |
| 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 know about and explain the movement of the Earth, and other planets, relative to the Sun in the solar system  To know about and explain the movement of the Moon relative to the Earth  To describe the Sun, Earth and Moon as approximately spherical bodies  To use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky. | To know the life cycle of different living things e.g. mammal, amphibian, insect and bird  To know the differences between different life cycles  To know the process of reproduction in plants  To know the process of reproduction in animals | 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 know that living things have changed over time.  To know that fossils provide information about living things that inhabited the Earth millions of years ago  To know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents  To know how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.  To know about evolution and explain what it is. |
| 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 plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.  To take measurements, with increasing accuracy and precision  To record data and results of increasing complexity using scientific diagrams and labels, tables, 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  identifying 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, 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 record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.  To identify scientific evidence that has been used to support or refute ideas or arguments.  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 |
| 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 | Mercury  Venus  Earth  Mars  Jupiter  Saturn  Uranus  Neptune  Rotate  Orbit  Satellite  Heliocentric  Geocentric  Universe  Axis  Solar system  Celestial body  Spherical body  Gravity  Gravitational force | Fertilise  Gestation  Life cycle  Metamorphosis  Pollination  Reproduction  Sexual reproduction  Asexual reproduction  Cell  Mammal  Amphibian  Embryo  insect | Micro-organisms  Organism  Characteristics  Plants  Animal  Classification  Compare  Invertebrates  Insects  Vertebrates  Amphibians  Reptiles  Birds  Mammals  Carl Linnaeus  Linnaean  Domain  Kingdom  Phylum  Genus  Species | Living things  Change  Fossils  Offspring  Not identical  Vary  Characteristics  Variation  Mary Anning  Charles Darwin  Adapt  Environment  Extreme  Conditions  Evolution  Adaptation  Inherit  Inheritance  habitat |