



***Durweston CE VA Primary School  
Including Handy Paws pre-school***

# **Science Policy**

**Adopted by: Autumn 2020  
Revised: Annually**

*Feed the mind, nurture the Spirit, free the imagination!*

**Vision – the essential characteristics of scientists!**

At Durweston, we want our children to have:

- The ability to think independently and raise questions about working scientifically
- The confidence and competence in the full range of practical skills to enable them to take the initiative in planning and carrying out scientific investigations
- Excellent scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings
- The ability to undertake practical work in a variety of contexts including fieldwork
- A passion for science and its application in past, present and future technologies

**Equality, Diversity and Inclusion**

Our curriculum planning ensures regular, progressive access to science for all children irrespective of gender, race, creed or disability.

We recognise the fact that we have children of differing ability in all our classes, and we provide suitable learning opportunities for all by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies:

- setting tasks that are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty, where not all children complete all tasks;
- providing a range of challenges with different resources;
- having more adults support the work of individual children or small groups

**Planning**

Science planning follows the National Curriculum 2014 using two-year mixed age planning from the Hamilton Trust. <https://www.hamilton-trust.org.uk/science/> These plans are free.

This planning ensures that each child covers all of the required elements of the National Curriculum. Each summer, each class has a dedicated Science and DT topic where children are encouraged to take a broader view of science and scientists and link science to other areas of the curriculum.

|          | Dolphins (Hamilton year 1/2 plans)      | Seahorses (Hamilton year 2 and year 3 plans) | Sharks (Hamilton year 3/4 plans)     | Porpoises (Hamilton year 5/6 plans) |
|----------|---|--|--------------------------------------|-------------------------------------|
| Autumn A | Amazing Me!                             | Rocks and Fossils                            | Electric Personalities               | Illustrating Life Cycles            |
|          | Wild Weather                            | Amazing Magnets                              | What's the matter?                   | Materials Consultants               |
| Spring A | Brilliant Builders                      | Habitats                                     | A world of living things             | The Human Species                   |
|          | Growing Things                          | Keeping Healthy                              | A Feast of Flowers, Fruits and Seeds | Theatre Lighting Technicians        |
| Summer A | Wild and Wonderful Creatures            | Ready, Steady, Grow                          | Shining Light                        | Electric Art                        |
|          | Food chains                             | Artful Flowers, Fruits and Seeds             | Fit for Success?                     | Medical Manoeuvres (Revision)       |
|          |   |  |                                      |                                     |
| Autumn B | People and their Pets                   | Healthy Animals                              | This Planet Rocks                    | Special Effects Materials           |
|          | Weather Art                             | Light and Shadow                             | Sounds Spectacular                   | Earth and Space                     |
| Spring B | Brilliant Builders: Comparing Materials | Squash, Bend, Twist and Stretch              | Habitat Helpers                      | Welcome to Force land               |
|          | Plants: Art and nature                  | Materials Matter                             | Greatly Green Growers                | The Classification Code             |
| Summer B | Exploring Changes                       | Roots and Shoots                             | The Circle of Life                   | Survival of the Fittest             |
|          | Habitats and Homes                      | Gardens and Allotments                       | Magnetic Fun And Games               | Sensational Science (Revision)      |

| Biology  | Physics  | Chemistry                                       |
|--|--|---|
| Animals including Humans<br>Seasonal Changes<br>Plants<br>Living Things and Their Habitats Evolution and Inheritance | Light<br>Forces and Magnets<br>Sound<br>Electricity<br>Earth and Space | Everyday Materials<br>Rocks<br>States of Matter |

Every child will have a black and white copy of this in science books. They must colour in the grid as they complete the unit. The sheet is then handed up to their next teacher so that a record is kept of the units they have not covered and the year 6 teacher can plan accordingly.

The Hamilton Overviews for the units covered in our science curriculum can be found in the School Google Drive folder. These give an overview of the key NC objectives covered in each unit, as well as providing teachers with activities and opportunities to extend activities for our mixed year groups.

### **Foundation stage**

We teach science in Handy Paws and Reception as an integral part of the topic work covered during the year. As the reception class is part of the Foundation Stage of the National Curriculum, we relate the scientific aspects of the children's work to the objectives set out in the Early Learning Goals which underpin the curriculum planning for children aged three to five. These topics link with the KS1 and 2 planning. Science makes a significant contribution to the objectives in the Early Learning Goals of developing a child's knowledge and understanding of the world. The objectives covered in our EYFS and Reception class can be found on the *Durweston School: Progression of Skills, Knowledge and Vocabulary (Science)* Document (see Appendix 2).

### **Key Knowledge and Vocabulary**

The knowledge and vocabulary that are taught across our curriculum can be found on the *Durweston School: Progression of Skills, Knowledge and Vocabulary (Science)* Document (Appendix 2). To supplement this, teachers also use Science Knowledge Planners, which can be found on the School Google Drive in the Science Folder. As a unit progresses, teachers co-construct a class knowledge map, with the children and this is displayed in each classroom alongside any key scientific vocabulary for the unit.

### **Assessment**

Ongoing assessment of the children's retention of key knowledge is integral to teaching and learning in Science. Teachers plan opportunities to revisit and revise the key knowledge covered across a unit of work. This key knowledge is displayed on Knowledge Maps and used as a tool to aid recall across a unit and beyond. We assess the children's work in Science against the NC (Appendix 2). Observations made during the year inform future planning and enable the teacher to make an annual assessment of progress as part of each child's annual report to parents. At the end of each unit in science, children are assessed by the teacher and these assessments are used to inform future planning. Each term, teachers input science assessment data onto Insight. These are used by the subject leader to highlight and monitor focus children.

### **Resources**

We have a limited range of resources to support the teaching of Science across the school which is kept upstairs. This room is accessible to children only under adult supervision. Please speak to the Science co-ordinator if there is anything that you need and/or record in your termly topic evaluation things that need to be purchased to enable delivery of the topic.

### **Health and safety**

Science is a subject with considerable health and safety implications. We endeavour to teach children to respect and handle safely both living things and any equipment and materials which they made need to use. Pupils and teachers recognise the hazards involved, assess the risks and take action to minimise both in all science activities. Please see attached Science Risk Assessment (Appendix 3)

**Monitoring and review**

The co-ordination of the Science curriculum is the responsibility of the Science subject leader. Each term, the subject leader will monitor planning to make sure it follows the long-term plan and support colleagues in their teaching. They will support class teachers in the gathering of samples of work. At the end of the year, they will scrutinize the work sampled and write an action plan based on their findings.

This policy will be reviewed every four years.

Spring 2020 NB

Appendix 1

Name \_\_\_\_\_

Science Coverage Record Sheet

Please colour the topics as you complete them. Keep the sheet in a pocket in the back of your Science book. Please do not stick in, as the sheets need to move up with you.

**Science 2-year plan**

|          | Dolphins (Hamilton year 1/2 plans)             | Seahorses (Hamilton year 2 and year 3 plans) | Sharks (Hamilton year 3/4 plans)            | Porpoises (Hamilton year 5/6 plans)   |
|----------|--|--|---|---------------------------------------|
| Autumn A | <b>Amazing Me!</b>                             | <b>Rocks and Fossils</b>                     | <b>Electric Personalities</b>               | <b>Illustrating Life Cycles</b>       |
|          | <b>Wild Weather</b>                            | <b>Amazing Magnets</b>                       | <b>What's the matter?</b>                   | <b>Materials Consultants</b>          |
| Spring A | <b>Brilliant Builders</b>                      | <b>Habitats</b>                              | <b>A world of living things</b>             | <b>The Human Species</b>              |
|          | <b>Growing Things</b>                          | <b>Keeping Healthy</b>                       | <b>A Feast of Flowers, Fruits and Seeds</b> | <b>Theatre Lighting Technicians</b>   |
| Summer A | <b>Wild and Wonderful Creatures</b>            | <b>Ready, Steady, Grow</b>                   | <b>Shining Light</b>                        | <b>Electric Art</b>                   |
|          | <b>Food chains</b>                             | <b>Artful Flowers, Fruits and Seeds</b>      | <b>Fit for Success?</b>                     | <b>Medical Manoeuvres (Revision)</b>  |
|          |  |  |   |                                       |
| Autumn B | <b>People and their Pets</b>                   | <b>Healthy Animals</b>                       | <b>This Planet Rocks</b>                    | <b>Special Effects Materials</b>      |
|          | <b>Weather Art</b>                             | <b>Light and Shadow</b>                      | <b>Sounds Spectacular</b>                   | <b>Earth and Space</b>                |
| Spring B | <b>Brilliant Builders: Comparing Materials</b> | <b>Squash, Bend, Twist and Stretch</b>       | <b>Habitat Helpers</b>                      | <b>Welcome to Force land</b>          |
|          | <b>Plants: Art and nature</b>                  | <b>Materials Matter</b>                      | <b>Greatly Green Growers</b>                | <b>The Classification Code</b>        |
| Summer B | <b>Exploring Changes</b>                       | <b>Roots and Shoots</b>                      | <b>The Circle of Life</b>                   | <b>Survival of the Fittest</b>        |
|          | <b>Habitats and Homes</b>                      | <b>Gardens and Allotments</b>                | <b>Magnetic Fun And Games</b>               | <b>Sensational Science (Revision)</b> |

Key

| Biology  | Physics  | Chemistry                                       |
|--|--|---|
| Animals including Humans<br>Seasonal Changes<br>Plants<br>Living Things and Their Habitats Evolution and Inheritance | Light<br>Forces and Magnets<br>Sound<br>Electricity<br>Earth and Space | Everyday Materials<br>Rocks<br>States of Matter |

**Appendix 2 Planning and Assessment****Progression of Skills, Knowledge and Vocabulary Document**

|                            | <b>Handy Paws</b>   | <b>Starfish</b>   |
|----------------------------|---|---|
| Plants                     | The World 30-50m<br>Can I develop an understanding of growth, decay and changes over time? Can I show care and concern for living things and the environment? Can I talk about some of the things I have observed such as plants, animals, natural and found objects?     | World -ELG<br>Can I make observations of animals and plants and explain why some things occur, and talk about changes?<br><br>Spring Term - Plants and Growing<br>- Traditional Tales   |
| Animals, inc humans        | The World 30-50m<br>Can I develop an understanding of growth, decay and changes over time? Can I show care and concern for living things and the environment? Can I talk about some of the things I have observed such as plants, animals, natural and found objects? The | World -ELG<br>Can I make observations of animals and plants and explain why some things occur, and talk about changes?<br><br>Spring Term - Plants and Growing<br>- Traditional Tales<br>Summer Term – Mini beasts  |
| Living things and habitats | The World 30 -50m<br>Can I show care and concern for living things and the environment?   | The World ELG<br>Children know about similarities and differences in relation to places, objects, materials and living things.<br><br>Autumn Term - Houses and Homes<br>Spring Term - Traditional Tales<br>Summer Term - Mini beasts  |
| Everyday Materials         |   | The World ELG<br>Can I talk about similarities and differences in relation to places, objects, materials and living things?<br><br>Autumn Term - Houses and Homes<br>Spring Term - Plants and Growing<br>Summer Term – Mini beasts  |
| Seasonal Changes           | The World 40-60m<br>Can I look closely at similarities, differences, patterns and change?   | The World 40-60m<br>Can I look closely at similarities, differences, patterns and change?<br>The World ELG<br>Can I talk about the features of my own immediate environment and how environments might vary from one another?<br><br>Autumn Term - Houses and Homes<br>Spring Term - Plants and Growing |

|   | Year 1  | Year 2   | Year 3  | Year 4  | Year 5  | Year 6   |
|---|---|--|---|---|---|--|
|   | Progression in Enquiry Skills   |  |   |   |   |  |
| P<br>l<br>a<br>n<br>i<br>n<br>g<br>a<br>n<br>d<br>p<br>r<br>e<br>d<br>i<br>c<br>t<br>i<br>n<br>g                | <ul style="list-style-type: none"> <li>Suggest what might happen</li> <li>Suggest simple ways to test ideas.</li> </ul> <p>GD- Organise a group to carry out an investigation/observation.</p>  | <ul style="list-style-type: none"> <li>With help, suggest some ideas and questions.</li> <li>Thinks about how to collect evidence.</li> <li>Suggest what might happen.</li> </ul> <p>GD- Choose own equipment and explain their choices.</p>   | <ul style="list-style-type: none"> <li>With help, forward ideas about testing.</li> <li>Make predictions.</li> </ul> <p>With help:</p> <ul style="list-style-type: none"> <li>Consider what constitutes a fair test.</li> <li>Plan a carry out a fair test.</li> </ul> <p>GD- Plan and carry out a test varying one factor and keeping the others the same.</p>             | <ul style="list-style-type: none"> <li>Recognise why it's important to collect data to answer questions.</li> <li>Suggest questions that can be tested.</li> <li>Put forward ideas about testing and make predictions.</li> <li>With help, plan fair tests.</li> </ul> <p>GD- Decide on appropriate approach in their own investigations to answer questions.</p>   | <ul style="list-style-type: none"> <li>Begin to talk about how scientific ideas have developed over time.</li> <li>Make predictions based on scientific knowledge.</li> <li>Make their own decisions about practical enquiries and how to set them up.</li> </ul> <p>GD- Explain predictions in writing, using scientific knowledge.</p>  | <ul style="list-style-type: none"> <li>Discuss how scientific ideas have developed over time.</li> <li>Make predictions based on scientific knowledge and understanding.</li> <li>Select and plan the most appropriate types of scientific enquiry.</li> </ul>   |
| I<br>n<br>v<br>e<br>s<br>t<br>i<br>g<br>a<br>t<br>i<br>n<br>g<br>a<br>n<br>d<br>O<br>b<br>s<br>e<br>r<br>v<br>i | <ul style="list-style-type: none"> <li>Make observations using appropriate senses.</li> <li>With help, decide how to sort and group objects.</li> <li>Explore using the 5 senses.</li> </ul> <p>GD -Communicate observations orally, in drawing, labelling, simple writing and using ICT.</p> | <ul style="list-style-type: none"> <li>Observing closely using simple equipment,</li> <li>Using simple features to sort and group objects.</li> <li>With help, observing changes over time.</li> <li>Using 1<sup>st</sup> hand experience and, with help, simple information sources to find answers to questions.</li> </ul> <p>GD- Begin to recognise when a test is fair.</p> | <ul style="list-style-type: none"> <li>Make careful observations and comparisons.</li> <li>Discuss criteria for sorting and grouping objects.</li> <li>Measuring length, volume and time in std measures using simple equipment.</li> </ul> <p>GD- Explain when a test is unfair.</p> <p>Carry out tasks, where they vary one factor while keeping the others the same.</p> | <ul style="list-style-type: none"> <li>Make relevant observations and comparisons.</li> <li>Suggesting criteria for sorting and grouping, using simple keys.</li> <li>Make measurements of length, temp, time and force.</li> <li>Begin to think about why repeated measurements of length should be repeated.</li> </ul> <p>GD- Explain which results should be chosen from a set of repeated results.</p> | <ul style="list-style-type: none"> <li>Carry out fair tests, explaining why it is fair.</li> <li>Use and develop keys classify and describe.</li> <li>Understand why observations and measurements need to be repeated.</li> <li>Select information from provided resources.</li> </ul> <p>GD</p> <p>Using averages to gain one representative result from a set of repeated results.</p> | <ul style="list-style-type: none"> <li>Carry out a fair test identifying key factors to be considered.</li> <li>Make a variety of relevant and accurate observations and measurements.</li> <li>Decide when repeat readings are appropriate.</li> <li>Select information from a range of sources.</li> <li>GD Understand the difference in how to investigate qualitative and quantitative data</li> </ul> |

|  |  |   |  |   |  |   |
|--|--|---|--|---|--|---|
| n<br>g   |  |   |  |   |  |   |
| R<br>e<br>c<br>o<br>r<br>d<br>i<br>n<br>g<br>,<br>A<br>n<br>a<br>l<br>y<br>s<br>i<br>n<br>g<br>a<br>n<br>d<br>E<br>v<br>a<br>l<br>u<br>a<br>t<br>i<br>n<br>g | <ul style="list-style-type: none"> <li>• Communicate findings in simple ways.</li> <li>• Collect evidence to try to answer a question.</li> </ul> <p>GD- Use charts to communicate findings.</p> | <ul style="list-style-type: none"> <li>• Record findings in simple ways including graphs etc</li> <li>• Say whether what happened was expected.</li> </ul> <p>GD- Use comparative adjectives to explain patterns eg bigger, smaller, greater, higher.</p> | <ul style="list-style-type: none"> <li>• Communicate findings in a variety of ways.</li> <li>• Say whether what happened was expected and draw simple conclusions.</li> <li>• With help, identify simple patterns and suggest explanations.</li> </ul> <p>GD- Lead a group to present findings using a variety of resources.</p> | <ul style="list-style-type: none"> <li>• Explain scientifically what the evidence shows and whether it supports predictions.</li> <li>• Suggest improvements.</li> </ul> <p>GD Suggest improvements giving reasons.</p> | <ul style="list-style-type: none"> <li>• Communicate findings in a variety of ways.</li> <li>• Identify simple trends and patterns and offer explanations.</li> <li>• Draw conclusions and communicate them.</li> <li>• Suggest improvements giving reasons.</li> </ul> <p>GD: Begin to explain anomalous data. Draw own bar and line graphs to represent results.</p> | <ul style="list-style-type: none"> <li>• Communicate findings in tables, bar graphs and line graphs.</li> <li>• Identify trends and patterns and results that do not appear to fit the pattern..</li> <li>• Provide explanations for these</li> <li>• Draw conclusions and communicate them.</li> <li>• Suggest practical improvements for improvements in their work giving suggestions.</li> </ul> <p>GD- Explain anomalous data with a variety of reasons and how interpretation of evidence leads to new ideas.</p> |

|                                 | Year 1  | Year 2  | Year 3   | Year 4  | Year 5                                    | Year 6  |
|---------------------------------|---|---|--|---|---|---|
|                                 | <b>Progression of knowledge (Statutory requirements of NC)</b>  |   |  |   |   |   |
| <b>Plants</b>                   | The names of at least 5 common wild and garden plants.<br><br>The names at least 5 deciduous and/or evergreen trees.<br><br>The basic structure of plants and trees (roots, trunk, stem, flower, canopy)  | How seeds and bulbs grow into mature plants<br><br>How plants need water, light and a suitable temperature to grow and stay healthy.  | The functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers<br><br>The requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant<br><br>The way in which water is transported within plants<br><br>The part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. |   |   |   |
| <b>Seasonal changes</b>         | The names of the four seasons<br><br>How the weather changes with the seasons and how day length varies.  |   |  |   |   |   |
| <b>Animals including Humans</b> | The name of at least 10 common animals including fish, amphibians, reptiles, birds and mammals.<br><br>The name of at least 5 common animals that are carnivores, herbivores and omnivores.<br><br>The basic parts of the human body and say which part of the body | That animal, including humans, have offspring which grow into adults.<br><br>The basic needs of animals, including humans, for survival (water, food and air)<br><br>The importance for humans of exercise, eating the right amounts of different types of food, and hygiene. | That animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat<br><br>That human and some other animals have skeletons and muscles for support, protection and movement.  | The basic parts of the digestive system in humans<br><br>The different types of teeth in humans and their simple functions<br><br>That food chains vary and what animals are producers, predators and prey. | The changes as humans develop to old age. | The main parts of the human circulatory system and the functions of the heart, blood vessels and blood.<br><br>The impact of diet, exercise, drugs and lifestyle on the way their bodies function.<br><br>The ways in which nutrients and water are transported within animals, including humans. |

|   |  |   |  |   |  |  |
|---|--|---|--|---|--|--|
|   | <p>is associated with each sense.</p>  |   |  |   |  |  |
| <b>Eve<br/>ryd<br/>ay<br/>mat<br/>eria<br/>ls<br/>Stat<br/>es<br/>of<br/>mat<br/>ter<br/>Pro<br/>pert<br/>ies<br/>of<br/>Mat<br/>eria<br/>ls<br/>Roc<br/>ks</b> | <p>The difference between an object and the material from which it is made.</p> <p>That objects can be made from everyday materials including wood, plastic, glass, metal, water, and rock</p> <p>The simple physical properties of a variety of everyday materials.</p> | <p>About the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p> <p>How the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p> | <p>The simple physical properties of different kinds of rocks</p> <p>In simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>Those soils are made from rocks and organic matter.</p> | <p>That materials are solids, liquids or gases.</p> <p>That some materials change state when they are heated or cooled, and how to measure or research the temperature at which this happens in degrees Celsius (°C)</p> <p>The part played by evaporation and condensation in the water cycle and associates the rate of evaporation with temperature.</p> | <p>The properties of everyday materials , including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>That some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>How mixtures might be separated, including through filtering, sieving and evaporating</p> <p>That dissolving, mixing and changes of state are reversible changes.</p> <p>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> |  |

|                            |  |   |   |  |  |   |
|----------------------------|--|---|---|--|--|---|
| Living things and habitats |  | <p>The differences between things that are living, dead, and things that have never been alive</p> <p>That most living things live in habitats to which they are suited and describe</p> <p>How different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>The name a variety of plants and animals in their habitats, including microhabitats</p> <p>How animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p> |   | <p>That living things can be grouped in a variety of ways.</p> <p>That classification keys help group, identify and name a variety of living things in their local and wider environment.</p> <p>That environment can change and that this can sometimes pose dangers to living things.</p>  | <p>The differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>The life process of reproduction in some plants and animals.</p> | <p>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>  |
| Light and Sound            |  |   | <p>That we need light in order to see things and that dark is the absence of light</p> <p>That light is reflected from surfaces</p> <p>That light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>That shadows are formed when the light from a light source is blocked by an opaque object</p> <p>The size and shape of shadows can change.</p> | <p>How sounds are made, associating some of them with something vibrating.</p> <p>That vibration from sounds travel through a medium to the ear.</p> <p>That there are patterns between the pitch of a sound and features of the object that produced it.</p> <p>That there are patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>That sounds get fainter as the distance from the sound source increases.</p> |  | <p>That light appears to travel in straight lines</p> <p>That objects are seen because they give out or reflect light into the eye.</p> <p>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>That light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p> |

|                              |  |   |  |  |  |
|------------------------------|--|---|--|--|--|
| Forces                       |  | <p>That things move in different ways on different surfaces</p> <p>That some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>That magnets attract or repel each other and attract some materials and not others</p> <p>That some everyday materials are attracted to a magnet</p> <p>That magnets as have two poles</p> |  | <p>That unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>The effects of air resistance, water resistance and friction, that act between moving surfaces.</p> <p>That some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> |  |
| Electricity, Earth and Space |  |   | <p>At least 5 common appliances that run on electricity.</p> <p>How to construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>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>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>Some common conductors and insulators, and associate metals with being good conductors.</p> | <p>The movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>That the movement of the Moon is relative to the Earth.</p> <p>That the Sun, Earth and Moon are approximately spherical bodies</p> <p>The idea Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>               | <p>That the brightness of a lamp or the volume of a buzzer is related to the number and voltage of cells used in the circuit</p> <p>They use recognised symbols when representing a simple circuit in a diagram.</p> |

## Science Curriculum Key Vocabulary

| <b>Year 1</b>   | <b>Year 2</b>  | <b>Year 3</b>   | <b>Year 4</b>  | <b>Year 5</b>   | <b>Year 6</b>  |
|---|--|---|--|---|--|
| <b>Animals including humans</b><br>Fish, Reptiles, Mammals, Birds, Amphibians (+ examples of each)<br>Herbivore, Omnivore, Carnivore, Leg, Arm, Elbow, Head, Ear, Nose, Back, Wings, Beak | <b>Animals including humans</b><br>Survival, Water, Air, Food, Adult, Baby, Offspring, Kitten, Calf, Puppy, Exercise, Hygiene  | <b>Animals including humans</b><br>Movement, Muscles, Bones, Skull, Nutrition, Skeletons,                         | <b>Animals including humans</b><br>Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar                     | <b>Animals including humans</b><br>Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty                | <b>Animals including humans</b><br>Circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration  |
| <b>Plants</b><br>Deciduous, Evergreen trees, Leaves, Flowers (blossom), Petals, Fruit, Roots, Bulb, Seed, Trunk, Branches, Stem   | <b>Plants</b><br>Seeds, Bulbs, Water, Light, Temperature, Growth   | <b>Plants</b><br>Air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower | <b>Living things and their habitats</b><br>Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats | <b>Living things and their habitats</b><br>Mammal, Reproduction, Insect, Amphibian, Bird, Offspring   | <b>Living things and their habitats</b><br>Classification, Vertebrates, Invertebrates, Micro-organisms, Amphibians, Reptiles, Mammals, Insects |
| <b>Everyday Materials</b><br>Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth  | <b>Living things and their habitats</b><br>Living, Dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert   | <b>Rocks</b><br>Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent                           | <b>States of Matter</b><br>Solid, Liquid, Gas, Evaporation, Condensation, Particles, Temperature, Freezing, Heating  | <b>Properties and changes of materials</b><br>Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing | <b>Evolution and Inheritance</b><br>Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics                                    |
| <b>Seasonal Changes</b><br>Summer, Spring, Autumn, Winter, Sun, Day, Moon, Night, Light, Dark   | <b>Everyday materials and their uses</b><br>Hard, Soft, Stretchy, Stiff, Shiny, Dull, Rough, Smooth, Bendy, Waterproof, Absorbent, Opaque, Transparent Brick, Paper, Fabrics, Squashing, Bending, Twisting, Stretching Elastic, Foil | <b>Light</b><br>Light, Shadows, Mirror, Reflective, Dark, Reflection  | <b>Sound</b><br>Volume, Vibration, Wave, Pitch, Tone, Speaker  | <b>Earth and Space</b><br>Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation                                   | <b>Light</b><br>Refraction, Reflection, Light, Spectrum, Rainbow, Colour,  |
|   |  | <b>Forces and magnets</b><br>Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull                | <b>Electricity</b><br>Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators   | <b>Forces</b><br>Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys  | <b>Electricity</b><br>Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, Amps, Volts, Cell              |

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| <b>Science Risk Assessment</b> | <b>Completed by Nicola Brooke</b> | <b>Due for review Annually</b> |
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| <b>Hazard / Risk</b><br>Things at the venue, parts of the activity etc that could cause harm | <b>Who is at risk?</b> | <b>Current Controls in Place</b><br>Are they adequate?<br>Is the risk acceptable?<br>Refer to generic RAs or Form 2 if applicable   | <b>Level of Residual Risk</b><br>Low, medium, high |
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| Electricity<br><br>Chemicals<br><br>Heat sources   | Pupils                 | Children are never allowed to experiment with mains electricity. Do not allow pupils to cut open batteries. Tiny batteries are not appropriate.<br><br>The only substances we experiment with are those readily available from Tesco. Children are reminded to put anything in their mouth during a Science lessons unless instructed to do so by their teacher.<br><br><br>Several practical activities require the use of heat. The following are suitable and acceptable sources but must be closely supervised by an adult:<br><br><b>Hot water/hot water bottles</b> | Low<br><br><br>Low                                 |

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|  | <p>Water from a kettle or water heater should be cooled before use to no more than 50 °C.</p> <p><b>Tealights</b><br/>Place securely in a metal tray, e.g. baking tray or tin lid filled with sand.</p> <p><b>Mains electric rings</b><br/>Induction hob available in the kitchen. Only to be used under close adult supervision.</p> <p><b>Hairdryers</b><br/>Do not bring hairdryers in from home because they may not have been constructed to the same standards as those intended for use in schools. Hairdryers available from school suppliers are thoroughly tested beyond the requirements for domestic hairdryers.</p> <p>Spirit burners, picnic stoves and other bottled gas devices, hot-air paint strippers and Bunsen burners are not recommended for Primary school use.</p> <p><i><b>Heat Sources: General Precautions</b></i></p> <p>Warn pupils about hazards involved, e.g. hotplates may be hot without appearing so.</p> <p>Ensure all heating activities take place under close adult supervision.</p> <p>Warn pupils not to lean across the table in case they come into contact with the flame/hot object.</p> <p>Combustible materials should be removed.</p> <p>Never leave a naked flame unattended. Dispose of matches carefully.</p> |  |
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| <p><i>Animals</i></p> <p><i>The hazards associated with the keeping of animals are the transmission of disease (particularly from farm animals) or parasites, bites, or stings; and infection or contamination due to animal waste products</i></p> | <p>Long hair and loose clothing must be tied back.</p> <p>Do not allow lit candles to be carried around.</p> <p>Pupils should stand for the activity, so that they can move away quickly in case of an accident.</p> <p>Animals kept in schools pose minimal hazards provided that they are kept well in appropriate housing, people in charge of them are aware of any particular requirements the animals have and general precautions outlined below are followed. Typically, Primary schools keep fish, various small mammals, giant African snails and stick insects. Greater hazards are involved when animals are brought into school for short periods, e.g. pets or garden 'minibeasts'.</p> <p>Proper planning regarding the care of animals is essential before deciding to keep animals in school. Consult a reference book before keeping any animal. Use reputable suppliers</p> <p>Keep animal housing clean and disinfect at regular intervals.</p> <p>Make suitable arrangements for holiday periods.</p> <p>Where animals are brought into school for a short period, ensure staff have sufficient experience of handling and looking after the animals concerned. Refer to reference texts (including CLEAPSS guidance documents listed below) if unsure.</p> <p>Liaise with parents when pets are brought in to school to ensure the particular animal is suitable for the particular class group.</p> |  |
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| <p>Use of Plants in Primary Schools</p> <p><i>The main hazard associated with the use of plants is that many are poisonous or irritants. Some pupils may be particularly vulnerable, e.g. those with allergies or asthma.</i></p> | <p>Cover cuts and abrasions on exposed skin.</p> <p>If animals run free on the floor or on tables, surfaces must be disinfected afterwards.</p> <p>Pupils and staff must wash their hands before and after handling animals. Pupils should wash hands in the classroom so that staff can be sure that hand washing takes place. Very young pupils should be supervised when washing hands.</p> <p>Animal wastes must be disposed of hygienically and any contaminated surfaces cleaned and disinfected.</p> <p>Children known to have allergic reactions to animals must have restricted access to animals that may trigger a response. Similar considerations apply to children who may be phobic about certain animals.</p> <p>The following CLEAPSS documents provide comprehensive guidance:</p> <ul style="list-style-type: none"><li>● ‘Bringing Pets and Other Animals into Schools’ (PS 55)</li><li>● ‘Small Mammals’ (L52)</li><li>● ‘Housing and Keeping Animals’ (L56)</li><li>● ‘Incubating and Hatching Eggs’ (L71)</li><li>● ‘Aquaria in Primary Schools: Electrical Safety’ (L124)</li><li>● ‘Giant African Land Snails’ (L197)</li><li>● ‘Bees and Beekeeping in Schools’ (PS87)</li></ul> <p>See also guidance on Infection Control on Schools’ PeopleNet.</p> <p>Teach children to avoid touching their eyes when handling plants.</p> <p>Teach children never to taste any part of a plant unless they are certain that it is</p> |  |
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|                                   |  | <p>safe.</p> <p>Warn children not to eat attractive looking fruits and seeds and teach children to always wash their hands after handling plants.</p> <p>The plants listed below are poisonous. However, instances of more serious harm are extremely rare and following the general controls above should be sufficient in most circumstances.</p> |  |
| <b>Garden and hedgerow plants</b> |  |   |  |
|                                   | Black bryony                                 | Ivy berries   |  |
|                                   | Black nightshade – especially unripe berries | Larkspur leaves and seeds   |  |
|                                   | Bluebell                                     | Lily of the Valley  |  |
|                                   | Bracken                                      | Lupin   |  |
|                                   | Buttercup                                    | Mistletoe leaves and berries  |  |
|                                   | Christmas rose                               | Monkshood or aconite  |  |
|                                   | Cuckoo-pint                                  | Potato – except the tubers  |  |
|                                   | Daffodil – all, especially bulbs             | Ragwort   |  |
|                                   | Deadly nightshade                            | Rhubarb – except leaf stalks  |  |
|                                   | Foxglove                                     | Snowdrop – all, especially bulbs  |  |
|                                   | Giant hogweed                                | Tomato – except fruits  |  |

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| Hemlock   | Tulip bulbs                                |  |
| Henbane   | White bryony                               |  |
| Iris and 'flags', all but especially rhizomes     | Woody nightshade – all, especially berries |  |
| <b>House plants</b>                               |  |  |
| Castor oil plant seeds                            | Hyacinth bulbs                             |  |
| Dumb cane   | Poinsettia leaves and flowers              |  |
| <b>Trees and shrubs</b>                           |  |  |
| Broom seeds                                       | Privet – all, especially berries           |  |
| Cherry laurel leaves and fruits                   | Rhododendron leaves and flowers            |  |
| Holly berries                                     | Snowberry fruits                           |  |
| Horse chestnut leaves, flowers and 'conkers'      | Spindle tree                               |  |
| Laburnum – all, especially seeds                  | Yew – all, especially seeds                |  |
| <b>Vegetables and fruit</b>                       |  |  |
| Beans – French and red kidney, raw or undercooked | Rhubarb – leaves                           |  |
| Potato – all green parts, including tubers        | Tomato – leaves                            |  |

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| Micro-organisms   |  |  |  |
| <p><i>The main hazard associated with work with micro-organisms is infection through inhalation, ingestion or entry through the eyes or cuts to the skin.</i></p> | <p>See also 'Plants for Classrooms' (CLEAPSS document G42).</p> <p>Only the following microbes that are known not to be hazardous to humans should be used:</p> <ul style="list-style-type: none"> <li>● Yoghurt</li> <li>● Baker's and brewer's yeast</li> <li>● Mould gardens and compost</li> <li>● Cheese-making bacteria</li> <li>● Edible mushrooms</li> </ul> <p>Growing microbes on Petri dishes should not be carried out in Primary schools as this requires special skills, materials and equipment that Primary schools do not possess.</p> <p>Do not use microbes from natural materials such as soil or pond water. Also avoid obviously risky sources such as rubbish from dustbins, rotting meat or fish, human body fluids or the remains of animals.</p> <p>Staff and pupils must always wash their hands thoroughly with soap and water after working with microbes.</p> <p>Hands must also be washed before any work in which microbes are used to prepare food that will be tasted. Hands should be dried hygienically using disposable paper towels rather than a hand towel.</p> <p>Cover all cuts and abrasions on staff or pupils before starting work with microbes.</p> |  |  |

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|  |  | <p>All material used for growing microbes should be in covered containers (bottles, jars, cartons with lids, open containers covered with Clingfilm).</p> <p>When growing yeasts, the container should not be completely sealed to allow carbon dioxide to escape.</p> <p>Only grow microbes using the natural materials on which they normally grow.</p> <p>Pupils must never put anything into their mouths during this work.</p> <p>Mould cultures should be dated.</p> <p>If spills from microbe cultures occur, wipe them up immediately. Use disinfectant, wearing plastic or rubber gloves and guard against splashes into the eyes.</p> <p>For disposal, treat used cultures with disinfectant (hypochlorite or Virkon) before the remains are disposed of. Leave to soak overnight and preferably for 24 hours ensuring pupils cannot come into contact with the disinfectant.</p> <p>See also 'Studying Micro-organisms in Primary Schools' (CLEAPSS document L190) and guidance on Infection Control on Schools' PeopleNet.</p> <p>Teach pupils never to look directly at the sun.</p> <p>Be aware that the focusing of the sun's rays with a convex lens can cause a fire. Lenses, especially large ones, should be stored out of direct sunlight.</p> <p>Teach pupils using binoculars and telescopes to take care not to look directly at the sun, even accidentally.</p> <p>Special care should be taken when viewing an eclipse of the sun.</p> <p>See also 'Viewing the Sun' (CLEAPSS document PS17).</p> |  |
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| Pond |  | The pond is in a large tractor tyre by the mosaic door. There is a large log in the centre which reduces the depth. It would be extremely difficult for a child to fall into it. Children do not have unsupervised access to this area. We are investigating putting a mesh over the surface. |  |
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