



*Working hard to achieve our best*

## Curriculum Statement for SCIENCE

**Details of the Science Curriculum for each term for each year group can be found on the class webpages**

### **Spiritual, Moral, Social and Cultural development through the teaching of Science**

#### **Spiritual**

Science supports spiritual development by providing many opportunities for children to think and spend time reflecting on the amazing wonders which occur in our natural world.

#### **Moral**

Science supports moral development by showing children that different opinions need to be respected and valued. There are many moral and ethical issues that we cover in science including discussions about environmental and human issues.

#### **Social**

Science supports social development by exposing children to the power of collaborative working in the science community which has led to some amazing and life changing breakthroughs in medicine. When undertaking experiments and research children work collaboratively.

#### **Cultural**

Science supports cultural development by looking at how scientists from a range of cultures have had a significant impact globally. It also helps children to understand how important science is to the economy and culture of the UK.

### **Key characteristics of scientists**

We have identified the following key characteristics which we aim to develop to enable children to become independent and confident scientists:

- The ability to think independently and raise questions about working scientifically and the knowledge and skills that this brings.
- Confidence and competence in the full range of practical skills, taking the initiative in, for example, 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.
- High levels of originality, imagination and/or innovation in the application of skills.
- The ability to undertake practical work in a variety of contexts, including fieldwork.





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### Our approach to teaching Science at Houghton Primary School

In order that our learners are enabled to develop the key characteristics of scientists we teach science within a contextual approach which provides opportunities for independence and problem solving as children search for answers to questions or challenges. Supported by the teaching of a full range of practical and study skills children are enabled to carry out investigations and research which will develop their scientific skills knowledge and understanding. Our approach seeks to develop confidence and to stimulate original ideas. It encourages and celebrates imaginative and innovative solutions. We seek to inspire and motivate our children to want to find out more and to develop a thirst for scientific knowledge.

Science is taught mainly within a topic based approach in a two year cycle. In order for our approach to be successful our planning allows for flexibility within the timetable in order to enable focused days or weeks of scientific work which is undertaken in a cross-curricular approach. This ensures that skills in reading, writing, communication, ICT and mathematics can be applied successfully within scientific work. We also take every opportunity in science to undertake environmental work, enterprise projects and work that involves the children in risk management.

Science is assessed termly using criteria which define 'basic', 'advancing' and 'deep' learning. Assessment of children's scientific skills is used to plan for the coming term.

### Opportunities for science

In order to ensure that our children are provided with a range of opportunities to enable them to become scientists we provide:

	Key Stage One	Key Stage Two
<b>Biology</b>	<p>Opportunities to:</p> <p><b>Plants:</b></p> <ul style="list-style-type: none"> <li>Identify, classify and describe their basic structure.</li> <li>Observe and describe growth and conditions for growth.</li> </ul> <p><b>Habitats:</b></p> <ul style="list-style-type: none"> <li>Look at the suitability of environments and at food chains</li> </ul> <p><b>Animals and Humans:</b></p> <ul style="list-style-type: none"> <li>Identify, classify and observe</li> <li>Look at growth, basic needs, exercise, food and hygiene</li> </ul> <p><b>*All living things:</b></p> <ul style="list-style-type: none"> <li>Investigate differences</li> </ul>	<p>Opportunities to write:</p> <p><b>Plants:</b></p> <p>Look at the function of parts of flowering plants, requirements of growth, water transportation in plants, life cycles and seed dispersal.</p> <p><b>Evolution and inheritance:</b></p> <p>Look at;</p> <ul style="list-style-type: none"> <li>Resemblance in offspring</li> <li>Changes in animals over time</li> <li>Adaptation to environments</li> <li>Differences in offspring</li> <li>Adaptation and evolution</li> <li>Changes to the human skeleton over time</li> </ul> <p><b>Animals and humans:</b></p> <p>Look at;</p> <ul style="list-style-type: none"> <li>Nutrition, transportation of water and nutrients in the body and the muscles and skeleton system of humans and animals</li> <li>The digestive system in humans</li> <li>Teeth</li> <li>The human circulatory system</li> </ul> <p><b>All living things:</b></p>



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Key Stage One		Key Stage Two	
		<ul style="list-style-type: none"> <li>Identify and name plants and animals</li> </ul> <p>Look at;</p> <ul style="list-style-type: none"> <li>Classification keys</li> <li>The life cycle of animals and plants</li> <li>Classification of plants, animals and micro-organisms</li> <li>Reproduction in plants and animals and human growth and changes</li> <li>The effect of diet, exercise and drugs.</li> </ul>	
<b>Chemistry</b>	<p>Opportunities to:</p> <p><b>Materials:</b></p> <ul style="list-style-type: none"> <li>Identify, name, describe, classify and compare properties and changes</li> <li>Look at the practical uses of everyday materials</li> </ul>	<p>Opportunities to write:</p> <p><b>Rocks and Fossils:</b></p> <ul style="list-style-type: none"> <li>Compare and group rocks and describe the formation of fossils</li> </ul> <p><b>States of matter:</b></p> <ul style="list-style-type: none"> <li>Look at solids, liquids and gases, changes of state, evaporation, condensation and the water cycle.</li> </ul> <p><b>Materials:</b></p> <ul style="list-style-type: none"> <li>Examine the properties of materials using various tests</li> <li>Look at solubility and recovering dissolved substances</li> <li>Separate mixtures</li> <li>Examine changes to materials that create new materials that are usually not reversible</li> </ul>	
<b>Physics</b>	<p>Opportunities to:</p> <p><b>*Light:</b></p> <ul style="list-style-type: none"> <li>Look at sources and reflections</li> </ul> <p><b>*Sound:</b></p> <ul style="list-style-type: none"> <li>Look at sources</li> </ul> <p><b>*Electricity:</b></p> <ul style="list-style-type: none"> <li>Look at appliances and circuits</li> </ul> <p><b>Forces:</b></p> <ul style="list-style-type: none"> <li>Describe basic movements</li> </ul> <p><b>Earth and Space:</b></p> <ul style="list-style-type: none"> <li>Observe seasonal changes</li> </ul>	<p>Opportunities to write:</p> <p><b>Light:</b></p> <ul style="list-style-type: none"> <li>Look at sources, seeing, reflections and shadows</li> <li>Explain how light appears to travel in straight lines and how this affects seeing and shadows</li> </ul> <p><b>Sound:</b></p> <ul style="list-style-type: none"> <li>Look at sources, vibration, volume and pitch</li> </ul> <p><b>Electricity:</b></p> <p>Look at;</p> <ul style="list-style-type: none"> <li>Appliances, lamps, switches, insulators and conductors</li> <li>circuits, the effect of voltage in cells and the resistance and conductivity of materials</li> </ul> <p><b>Forces and magnets:</b></p> <p>Look at;</p> <ul style="list-style-type: none"> <li>contact and distant forces,, comparing and grouping materials</li> <li>poles, attraction and repulsion</li> <li>the effect of gravity and drag</li> </ul>	



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	forces <ul style="list-style-type: none"><li>transference of forces in gears, pulleys, levers and springs</li></ul> <b>Earth and Space:</b> <ul style="list-style-type: none"><li>Look at the movement of the Earth and the Moon</li><li>Explain day and night</li></ul>



### Key learning objectives for science

We have identified the following key learning objectives for Science:

#### Working Scientifically:

- To work scientifically

#### Biology:

- To understand plants
- To understand animals and humans
- To investigate living things
- To understand evolution and inheritance

#### Chemistry:

- To investigate materials

#### Physics:

- To understand movement, forces and magnets
- To understand the Earth's movement in space
- To investigate light and seeing
- To investigate sound and hearing
- To understand electrical circuits



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In 2016 we took part in the National Rocket Seeds Experiment... planting and trying to grow seeds that had orbited the Earth with astronaut Tim Peake.

<http://www.bbc.co.uk/news/science-environment-36038508>

[Click here for National Curriculum Programme of Study for Science](#)