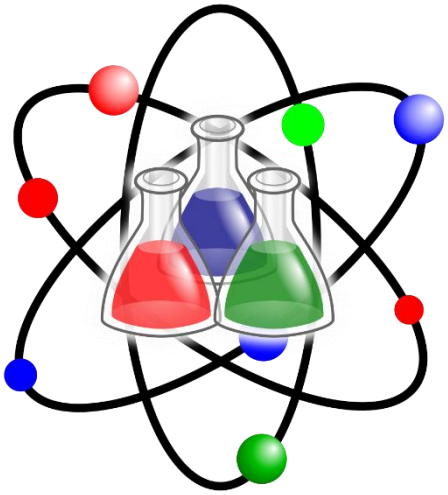
St Vincent De Paul R.C. Primary School, Knutsford

Mission Statement:

Believe, Trust and Be Ready
"That they may have life, and to the full" John 10:10

Science Curriculum



Science Curriculum Design

This document should be read alongside the Science policy, St Vincent's Progression in Scientific Knowledge and St Vincent's Progression in Scientific skills.

Rationale

Primary Science education is concerned with increasing pupils' knowledge and understanding of our world through the specific disciplines of Biology, Chemistry and Physics, and with developing skills associated with Science as a process of enquiry. It will develop the natural curiosity of the child, creating a sense of awe and wonder regarding the nature of our world. It encourages respect for living organisms and the physical environment and provides opportunities for critical evaluation of evidence. We believe that children should be encouraged to ask scientific questions and develop their own investigations based on ideas given by the teacher and their own ideas. These ideas will be increasingly founded in scientific knowledge and understanding and help children to appreciate how Science will affect their future on a personal, national and global level.

Intent

At St Vincent's Primary school, in conjunction with the aims of the National Curriculum, the intent of our Science teaching is to:

- develop an enthusiasm and enjoyment of scientific learning and discovery.
- build on our children's natural curiosity and develop their ability to generate and answer questions to help make sense of the world around them.
- encourage open mindedness and perseverance to develop the skills of investigation, ensuring that children are challenged and supported whatever their ability.
- be equipped with the scientific knowledge required to understand the uses and implications of Science, today and for the future, encouraging them to take responsibility for their world and develop good stewardship skills.
- increase scientific understanding through the use of the whole school environment, particularly our outdoor provision.

Implementation

How Science is structured throughout the School:

Science throughout the School has been planned to ensure that the school gives full coverage of 'The National Curriculum programmes of study for Science 2014', and 'Understanding of the World' in the Early Years Foundation Stage 2014 (updated 2021)

Staff use progression grids illustrating Scientific Knowledge (including vocabulary) and Scientific Skills to plan their series of lessons for each topic and ensure that there is appropriate coverage of specific objectives for each year group. Age-appropriate scientific vocabulary lists are also provided in books and on classroom displays so that key scientific terms become familiar and allow children to continually revisit and build on their knowledge.

Science in EYFS is integrated into curriculum topics and from Y1- Y6, Science is taught as discrete units according to our school's Long Term Plan to ensure coverage and progression but whenever possible cross-curricular links will be made. To inspire curiosity and wonder about the world around them, teachers use outdoor learning opportunities where there is relevance to their unit of learning. This supports the children's understanding of Science in action in the world around them and places it into a familiar and local context.

Staff adapt and extend their planning to match all pupils' needs and are mindful of additional support required by SEND pupils, as well as extending and challenging those working at greater depth.

A variety of resources are used by staff to help plan well-balanced and creative Science lessons. At the core of this are our St Vincent's Curriculum planning documents which are supported by a number of resources including: The Plymouth Science Scheme, ASE PLAN (Pan London Resource Network) resource planning sheets, A Creative Approach to Teaching Science by Nicky Waller, Focused Assessment plans (TAPs), STEM resources, Explorify and the Science Education website, PSTT

EYFS:

Science in EYFS is integrated into the curriculum as part of themed half-termly topics and covers the objectives laid out in the EYFS framework for Learning 2014 (updated September 2021) and Development Matters document. The objectives are mainly taken from the strand, 'Understanding of the World' but cover other strands of the EYFS framework, such as Communication and Language and Personal, Social and Emotional development.

Teachers and teaching assistants support pupils to develop a solid understanding of processes occurring around them in their day-to-day lives and in the natural world. Children are encouraged to be creative and inquisitive as they participate in activities, including exploratory play in particular areas of the classroom such as the role play corner or the enquiry cube. Pupils explore Science topics practically by using their senses, making observations, making predictions, and completing guided exploratory investigations. Regular use is made of the outside environment and our Forest School provision.

Key Stage One:

Pupils observe, explore and ask questions about living things, materials and the world around them. They begin to work together to collect evidence to help them answer questions, find patterns, classify and group objects, research using a variety of sources and carry out fair testing. They share their ideas and communicate using scientific language, drawings, charts and tables and in conjunction with their teacher use reference materials to find out more about scientific ideas.

Key Stage Two:

In Key Stage 2, our children build progressively upon the Scientific skills which they developed in Key Stage 1 and they are encouraged to extend the Scientific questions that they ask and answer about the world around them. They are increasingly challenged to understand and use Scientific vocabulary appropriately.

In both key stages, pupils carry out a range of scientific enquiries across the year including:

- observations over time,
- pattern seeking
- classifying and identifying
- comparative and fair testing
- research
- problem solving activities

Enrichment activities and Science Capital

Throughout the year we plan opportunities for the enrichment of the children's Science experience through a range of additional activities. These include:

- Relevant Science based visits occur to places of interest specific to the curriculum
- Extra-Curricular clubs including Science Crest Club, Gardening club, Mad Science
- Year 5/6 Science Ambassadors appointed to assist with the promotion of Science in school.
- Visits to St Nicholas High School – Sample KS3 lessons – Y5 and Y6
- Visitors – eg. Chemistry with cabbage, Forces workshop, Planetarium, Zoolab, STEM Ambassadors

- A biennial Science Fair during which individual year groups present experiments based around their class curriculum to their peers, supported by Y5/6 Science Ambassadors.
- Whole school investigations.
- Whole school global Science activities – Practical Action Challenges
- Promotion of parent/family involvement in Science using: extended research for homework, Science Selfie competition, visits from Parents with STEM occupations.

Impact

As a result of our Science teaching at St. Vincent's you will see:

- Children who are happy, engaged and enthused in their Science lessons and are able to ask and answer questions about the world around them.
- Children who can talk with confidence about their learning and knowledge in Science.
- Children who can plan and carry out scientific investigations, working with increasing independence as they progress through school.
- Children with an understanding of the important role of Science and Scientists in our world, inspired by a range of outside speakers and visits.

Long Term Plan (See progression document for individual objectives from EYFS – Y6)

<table>
<tr><th>Year Group</th><th>Autumn 1st</th><th>Autumn 2nd</th><th></th><th>Spring 1st</th><th>Spring 2nd</th><th></th><th>Sum 1st</th><th>Sum 2nd</th><th></th></tr>
<tr><td>Reception</td><td colspan="9">ELG:
Communication and Language - Make comments about what they have heard and ask questions to clarify their understanding.
Personal, Social and Emotional Development - Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.
Understanding of the World - Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</td></tr>
<tr><td></td><td>All about me

Animals, including humans,
Living things and their habitats</td><td>Terrific Tales

Seasonal Change,
Sound</td><td></td><td>World around us

Seasonal Change
Animals, including humans
Materials</td><td>In the garden

Plants
Living things and their habitats</td><td></td><td>Mad about mini beasts

Seasonal Change,
Living things and their habitats</td><td>Ticket to ride

Forces
Materials
Earth and Space</td><td rowspan="5">Great Science Share</td></tr>
<tr><td rowspan="2">Year 1</td><td colspan="8">Seasonal Changes (Revisited in Autumn, Winter, Spring, Summer – often cross curricular approach)</td></tr>
<tr><td colspan="2">Animals including humans</td><td rowspan="4">Festive investigation</td><td colspan="2">Everyday materials</td><td rowspan="4">Science Week</td><td colspan="2">Plants

VISIT -Tatton Park</td></tr>
<tr><td rowspan="2">Year 2</td><td>Uses of everyday materials</td><td>Uses of everyday materials</td><td>Animals including humans</td><td>Plants</td><td>Living things and their habitats

VISIT: Lower Moss Wood</td><td></td></tr>
<tr><td colspan="2">1 week of seasonal change observations Autumn -October</td><td>1 week of seasonal change observations Winter – January</td><td>1 week of seasonal change observations Spring – April</td><td colspan="2">1 week of seasonal change observations Summer – July</td></tr>
<tr><td>Year 3</td><td>Animals including humans</td><td>Light and shadows</td><td>Rocks

VISITOR: Local geologist</td><td>Plants</td><td>Plants/Forces and magnets</td><td>Forces and magnets</td></tr>
</table>

Year 4	States of matter VISIT: Catalyst Museum	States of matter		Sound	Animals including humans- digestion		Electricity	Living things and their habitats	
Year 5	Forces VISITOR :Forces workshop	Earth and Space VISIT: Jodrell Bank		Properties and changes of materials	Properties and changes of materials		Living things and their habitats	Animals. Including humans	
Year 6	Light VISITOR Chemistry with cabbage	Electricity		Living things and their habitats/ (classifying plants and animals)	Living things and their habitats/ (classifying plants and animals)		Evolution and inheritance	Animals, including humans	

Progression - See the following separate documents:

St Vincent's Progression in Scientific Knowledge, St Vincent's Progression in Scientific skills