St Jude's C of E Primary School's Subject Stories
Science

Intent

At St Jude's we believe science is instrumental for ensuring our children understand the world around them, as well as developing excitement, curiosity, awe and wonder about their surroundings. Through their learning, they are ready for today, and prepared for tomorrow.

In science, we are clear that Intent is the knowledge and skills the children acquire in our curriculum, which builds towards clearly defined end points.

We understand the importance of the **Early Years** for embedding strong foundations for future scientists. Our Early Years provision ensures that:

- Children have a knowledge of the natural world
- Children know how to look after their bodies and how to pursue active, healthy and happy lives
- Children are exposed to technological and ecologically diverse worlds
- Children can safely explore and use a range of materials
- Children understand important processes and changes in the natural word, including seasons and changing states and matter
- Children can notice similarities and differences in the natural world

In **Key Stage 1 and Key Stage 2**, our science curriculum is broad, balanced and engaging. It guides the children through a journey of discovery in the specific disciplines of biology, chemistry and physics. In their lessons, children will gain knowledge and understanding about the following:

- Plants
- Animals, including humans
- Everyday materials
- Seasonal changes
- Living Things and Habitats
- Rocks
- Light
- Forces and Magnets
- States of Matter
- Sound
- Electricity
- Properties and changes of materials
- Earth and Space
- Evolution and inheritance

Throughout each phase of learning, our curriculum is designed to ensure our children can **work scientifically**. By the end of their time at St Jude's, we aspire for all our children to be able to:

- Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- Use test results to make predictions to set up further comparative and fair tests
- Report and present findings from enquiries thoroughly and in a range of different methods
- Identify scientific evidence that has been used to support or refute ideas or arguments

Implementation

Our science curriculum at St. Jude's carefully aligns key scientific knowledge with skills for working scientifically to ensure children have a deep understanding. The lessons are planned in line with the creative curriculum as a school to ensure key links are made. The science curriculum is mapped alongside other subject areas, such as humanities, to ensure that children's learning is embedded into their long-term memory and meaningful learning experiences are made in a holistic way.

Science lessons throughout children's time at St. Jude's are carefully designed and coherently planned to build upon children's prior learning. Links are made across the year groups whereby similar topic areas are taught and there is clear progression across key stages to show the development of knowledge and skills expected at each stage. At every stage the use of a language-rich environment is crucial. Books focused upon STEM are available in each class and the use of technical terminology is modelled by

teaching staff and supported in resources, such as knowledge organisers, to ensure the children have built up an extended specialist vocabulary by the time they leave primary school so they are prepared for their future learning.

In EYFS the children are working towards their Early Learning Goals. One particular area focuses upon Understanding the World through the exploration of the Natural World. The children are engaged through the continuous provision to explore the world around them and are encouraged to notice similarities and differences between contrasting areas and the natural world. Through this they are also able to make observations and drawings of key aspects of nature, including plants and animals. Children are supported for future learning in higher key stages by understanding initial aspects of important processes such as changing seasons and states of matter. Tapestry and the children's Learning Journals evidence the children's experiences and learning journey across the year.

In Key Stage 1 and 2, key parts of the science curriculum are studied frequently and teachers plan lessons to build upon both previous year groups and the sequence of learning within that unit. It is vitally important the children develop a strong understanding of key knowledge and concepts before progressing to the next year group. For example, key areas such as plants; animals including humans; and living things and their habitats are all areas of the biology discipline of the science curriculum that are revisited throughout different year groups and are planned for progression. It is important that our curriculum also offers children the opportunity to explore working scientifically and develop an understanding of nature, processes and methods of scientific enquiry to support them now and in the future. Staff are supported in this with professional development meetings and regular monitoring feedback. The school also uses working scientifically statements to embed new learning in whole school topics and encourage children to develop fascination in the world around them.

The role of science within the whole school setting is celebrated with events including 'Science Week' and 'Clean Air Day'. Children are excited by the subject and have the opportunity to learn in different contexts through our links with the local community and extracurricular activities. Historically this has been shown with community links with Brockwell Park and Brockwell Greenhouses for all year groups. Key Stage 2 children have also attended primary STEM workshops at local secondary schools. Furthermore, the children have been subject to exploration and engagement in science through the use of a range of extracurricular clubs throughout the school and within whole school values time sessions, as well as focusing on scientists through home learning and family learning projects.

Impact

- ✓ Children perform highly at the end of their key stages for science (Early Learning Goal – Understanding the World), KS1 and KS2 outcomes for science 2019-2020
  - ➢ EYFS Knowledge and Understanding of the World: 89% Expected 23% Greater Depth
  - ➢ KS1 and KS2 progress: 95% Made 3+ steps progress with 33% making 4+steps progress
- ✓ Children will become confident in posing scientific questions, planning investigations and drawing conclusions by interpreting data, making them prepared for future scientific learning.
- ✓ They will have participated in a wide range of Science events and worked to contribute to a whole school awareness of science through family learning projects, science trips and workshops, members of the local community visiting and science celebration events.
- ✓ Studying science will enable them to ask questions about the world around them and encourage them to develop a greater curiosity in the natural world.

If you were to walk into science lessons at St Jude's, you would see:

- **A wide range of scientific enquiry being used to engage children and provide greater understanding–** Each year group has access to a wide range of scientific resources to help engage and deepen children's understanding. The science lessons draw upon a combination of knowledge and skills so pupils can use their prior understanding to support and develop them. We aim to incorporate our St. Jude's value of being prepared and helpful into scientific investigation so that the children are able to handle equipment safely and sensibly.
- **Relevant trips to extend and engage children within their learning –** Children take part in exciting scientific trips in our local community these include the Outdoor Learning Projects in Brockwell Park, exciting partnerships within our Windmill Cluster to Brockwell Greenhouses and preparing children for future learning with key stage 2 taking part in science enquiry sessions led by local secondary schools linked to a range of national curriculum science statements.
- **The use of key vocabulary throughout the school–** Children have vocabulary made available to them through knowledge organisers, displays, word mats and slideshows. We encourage the children to refer back to the key terminology and become increasingly independent in using the correct vocabulary to demonstrate their understanding.

St Jude's C of E Primary School's Subject Stories
Science

Pupil Voice

Year 2 child "I like that when we learn about things like materials we get to use lots of different types of materials and test them for different things like being waterproof, it's fun!"

Year 4 child "I enjoy when we do experiments and we get to test things out for ourselves, we usually learn about it first and then get to have a go at experimenting and it's great."

Year 6 child "This year in science I have enjoyed making our own questions and then testing them for the answers and writing about different science in different ways like diary entries."

An example of skill progression within our science curriculum

Science aspect: Working scientifically (observing and recording data)						
Reception:	**Year 1:**	**Year 2:**	**Year 3:**	**Year 4:**	**Year 5:**	**Year 6:**
Looks closely at similarities, differences, patterns and change. →	Observing closely using simple equipment. →	Using their observations to suggest answers to questions. →	Gathering, recording, classifying and presenting data in a variety of ways. →	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. →	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs. →	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms.

Our Diverse Curriculum

As a school, we are passionate that our children receive a broad, balanced, inclusive and diverse curriculum. We have developed anti-racist commitments, and endeavor to fulfill these in every curriculum area, including science. Within this subject, we will ensure:

- Diverse texts about STEM (Science, Technology, Engineering and Mathematics) are present in our class and virtual libraries, especially those which celebrate key figures of different ethnic backgrounds
- Areas of study explore the role of scientists within the key learning where appropriate. These lessons will include a diverse range of people, including different ethnicities, genders and cultural backgrounds. These figures are explored during Science Week and provide meaningful links within learning.
- Other opportunities are utilised to explore, promote and celebrate diverse figures, such as Family Learning Projects, Home Learning activities, newsletter items, Twitter posts, World Book Day, Science Week, and local community events.

Outstanding examples of learning

KS1 Outdoor Learning Project

Year 5 working with secondary school students

World Book Day Science Theme!

St Jude's C of E Primary School's Subject Stories
Science

Remote Learning

Whilst children are learning remotely, the following approaches are taken to ensure science teaching and learning is consistent and of a high quality:

- Science lessons are planned weekly and uploaded to the Google Classroom
- Resources are planned and designed carefully to support the learning objective each week
- Lessons include a 'Do it Now' task at the beginning of each lesson to review prior learning
- Children upload their work at least once a half term to receive feedback.
- Key vocabulary and sentence stems are used to ensure high quality explanations of different ideas
- Teacher videos and secondary source videos are included to support with scientific concepts and reviewed once a half term in google meets sessions