Juniper Hill School

Science Policy

Kindness Enjoyment Achievement

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Science is a way of working that allows children, through practical first-hand experiences and secondary sources, to develop knowledge and understanding of the world in which they live through the specific disciplines of biology, chemistry and physics. These experiences should enable the children to question, investigate, make sense of, communicate and evaluate their findings. Through building up a body of key foundational knowledge and concepts, children are encouraged to recognise the power of rational explanation backed by evidence and to develop a sense of excitement and curiosity about natural phenomena. In order to achieve well, children must not only acquire the necessary knowledge but also learn to work scientifically, using the 5 enquiry types identified in the National Curriculum: observation over time, fair and comparative testing, spotting patterns, grouping and classifying and the use of secondary sources. Children need to learn that science is a powerful tool to solve problems across the globe and about scientists who have made a difference in the world.

Intent for Science at Juniper Hill School

Develop compassionate and independent critical thinkers brimming with initiative. They have a thirst for knowledge and a deep appreciation of our world.

Introduction:

Our school vision is to empower our community to have the courage to make a difference in the world. Teaching children to be inspired about Science and working together will enable everyone to achieve their goals. Therefore, our Science Policy is underpinned by our three aims:

Kindness – Children support each other and compliment one-another's work. We show kindness and understanding by appreciating others' contributions and ideas.

Enjoyment – Science lessons are fun and often practical. Children have an active, practical experience and are able to exert some agency into their learning.

Achievement – we encourage everyone to achieve all that they can, by engaging learners in quality teaching and learning opportunities and providing appropriate resources, progression and interventions. Children will feel a sense of ownership in their Science work and will learn to appreciate their achievements.

Aims:

The aims of Science teaching at Juniper Hill are as follows:

- Build a love of science by enthusing children and making learning fun.
- To make sense of the world they live in and understand the processes and why things happen; to understand how to make a difference in the world (e.g healthy living choices, sustainability)
- Build on children's natural curiosity and sense of awe in the natural world.
- Develop confidence and self-agency by empowering children to ask questions, make their own decisions and by thinking rationally and critically about the outcomes.
- To develop language skills and increase their vocabulary by talking about their Science work and presenting their findings.
- Encourage children to be kind to each other and to develop collaboration skills alongside teamwork attitudes.
- Develop understanding of key scientific ideas and vocabulary through enquiry.

- Develop scientific skills through the Working Scientifically strand of the curriculum: observing, planning, measuring, grouping, analysing, presenting and reasoning.
- Have a deep appreciation of the power of evidence.
- Work safely on practical tasks.

Implementation:

At Juniper, Science is taught as a discrete subject. We follow the schemes of work laid out in the National Curriculum 2014 and the Early Years Foundation Stage Framework. As the children's knowledge and skills build up, they become more proficient in selecting and using equipment, collating and interpreting results, and more confident in their ability to come to conclusions based on real evidence.

Science is a practical subject and experimentation is both at the heart of the subject and essential to its teaching. The unpredictability of practical work encourages children to think creatively and logically about their results. It also shows that scientific ideas are only right until they are proved wrong as children learn to question their results more critically. Working Scientifically skills are embedded into lessons and new vocabulary and challenging concepts are introduced through direct teaching. Our outdoor areas are utilized as often as possible in science lessons throughout the school.

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all pupils are capable of achieving high standards in science. We use games, challenges, practical experiences, stories, ICT and drama to keep our lessons exciting. We ask children to show their learning in different ways- in speech, presentations, drawings, role playing, in drawings and diagrams and in writing of different types. Children are offered a range of visits, trips and visitors to complement and broaden the curriculum.

EYFS:

EYFS science curriculum is based on the EYFS framework under the strand of "Understanding of the world". Children learn through play and their explorations are sometimes prompted by teachers but are essentially child-led; play and talk are fundamental to learning. Outdoor learning and free exploration with objects and their environment are key to science learning. Problem solving approaches are very common and are sometimes linked to stories the children have heard. Science is always taught as part of an ongoing topic and weekly provision is made. Teachers are skilled at asking questions to develop children's scientific understanding and their understanding of the world.

KS1:.

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They are encouraged to be curious and ask questions about what they notice. They are helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science is done through the use of first-hand practical experiences, but there is also be some use of appropriate secondary sources, such as books, photographs and videos. 'Working scientifically' is embedded in the teaching of content.

LKS2:

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. 'Working scientifically' is embedded in the teaching of content.

UKS2:

The principal focus of science teaching in upper Key Stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They do this through exploring and talking about their ideas, asking their own questions about scientific phenomena and analysing functions, relationships and interactions more systematically. At upper key stage 2, they encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They also begin to recognise that scientific ideas change and develop over time. They select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils 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. 'Working scientifically' is embedded in the teaching of content.

Inclusion, SEND & Equal Opportunities:

We recognise that children are all individuals and that various adaptations are required to ensure that all children enjoy and learn science. Lessons are tailored so that all children can access them. Teachers provide suitable challenges for more able children as well as support for those who have emerging needs.

We are committed to providing all children with an equal entitlement to scientific activities and opportunities regardless of race, gender, culture or class. We aim to show diversity in the famous scientists we study and in the pictures we present to the children in science. Materials provided are not biased towards any class, race or gender.

Please refer to our Equal Opportunities and SEND policies for further details.

Assessment:

The primary functions of assessment at Juniper Hill are to show individual progress and to inform future teaching and learning. Teachers plan and assess from the National Curriculum which includes both knowledge and working scientifically.

Summative assessments are carried out for each topic which a knowledge based written assessment leading to a standardised score. A "working scientifically" assessment is based on observing children while they carry out scientific tasks against a criteria that will help teachers judge how well the children are achieving.

Teachers engage in regular formative assessment every lesson.

We use the results for each child in order to come to an end of year assessment on whether the children are below, at or exceeding expectation for end of year reporting.

In addition, the statutory assessments at Y2 and Y6 are carried out and take the form of a teacher assessment as to whether the children are below or at the expected standard. We use the nationally agreed framework in those year groups to help us decide.

Please also refer to the school's Assessment and Feedback policy.

Resources:

Science resources are kept in the Science cupboard. Teachers are responsible for using them correctly, in line with our health and safety policy and with the ASE publication "Be Safe!". The library is well stocked with books on different science topics.

Health and Safety

Children will be taught to use scientific equipment safely during practical activities. Class teachers and teaching assistants check equipment before use to ensure it is safe to use.

A simple risk assessment will be carried out by the teachers for all practical activities and any hazards identified will be actioned appropriately. Safe practice must be promoted at all times. We refer to the ASE publication, "Be Safe!" and to the CLEAPSS helpline to ensure that all practical activities are safe.

Please also refer to the school's Health and Safety policy.

British Values

We aim to demonstrate British values though our teaching of Science:

Democracy

- Listening to everyone's ideas to form a majority or consensus. Working as part of a team and collaborating to challenge thinking **.**

Rule of Law

- Understanding the expectations and how they respond positively to feedback.

Individual Liberty

- Taking responsibility for own behaviours, challenging stereotypes, bias and to learn how to become independent learners

Mutual Respect and Tolerance

- Tolerance towards others' opinions
- How scientists from a range of backgrounds have contributed to scientific dialogue.

Monitoring and Review:

Working with Senior Leadership Team, the subject leader will monitor for the standard of the children's work and the quality of teaching in Science. They are also responsible for evaluating the strengths and weaknesses in the subject and indicating areas for improvement and identify CPD. Data from end of year reports is evaluated.

Roles and responsibilities:

The Subject Leader is expected to champion the subject throughout the school, raising its profile and encouraging best practice.

This job description is reviewed annually and covers the following aspects.

- Leading the development of Science within the school
- Monitoring the subject's planning, teaching and learning, and standards
- Helping raise standards
- Providing teachers with support in the teaching of Science, including with subject knowledge and effective pedagogies
- Monitoring and maintaining high quality subject resources

- Keeping up to date with new developments in the subjects
- Meeting with the Curriculum Lead Governor

Impact:

Children at Juniper Hill School discover foundational scientific principles of how the world works through observing scientific phenomena and conducting experiments for themselves. Their experiences in Kagan Co-operative learning mean that they develop team working skills in communication, collaboration and conflict management. They demonstrate understanding of key scientific principles and develop a lasting interest in science.