Heartwood Church of England Academy Trust

Science Policy

This policy outlines the guiding principles by which the school implements the core subject of science in the context of the school development plan's curriculum content.

1. Our rationale for teaching science

Science is a body of knowledge built up through experimental testing of ideas. It is also methodology, a practical way of finding reliable answers to questions we may ask about the world around us. Science in our school is about developing children's ideas and ways of working in an enjoyable way that will enable them to make sense of the world in which they live through questioning and working scientifically.

We believe that a broad and balanced science education is the entitlement of all children, regardless of ethnic origin, gender, class, aptitude or disability.

2. Principles of science teaching:

In science lessons we believe that several elements should combine to make an effective science lesson: discussion, excitement, questions, and the enthusiastic engagement with task. This should then lead to a need to know more either through research or formulating a question to further investigate.

Good quality teaching should continue to provide learning experiences through fun activities which create these responses from children and thereby secure knowledge and understanding.

Our teaching aims
We aim to:

- teach science in ways that are creative, imaginative, purposeful, well managed and enjoyable.
- give clear and accurate teacher explanations and skilfully create questioning opportunities to foster children's natural inquisitiveness towards thinking scientifically.
- use a creative curriculum, making links between science and other subjects.
- help our children acquire a growing understanding of scientific ideas.
- help develop and extend our children's scientific concept of their world.
- foster concern about our environment including sustainable development.

Attitudes
Teaching should:

- encourage the development of positive attitudes to science.
- encourage open-mindedness, self-assessment, perseverance and responsibility.
- build our children's self-confidence to enable them to work independently.
- develop children's social skills to work cooperatively with others.
- provide children with an enjoyable experience of science, so that they will develop a deep and lasting interest and may be motivated to study science further.

Skills
High quality teaching will:

- develop the skills of working scientifically – including:
    - observing over time,
    - identifying and classifying
    - pattern seeking
    - researching
    - comparative and fair testing

  While working scientifically, children will: predict, hypothesise, investigate, measure, interpret, explain, record and evaluate their work and finally, communicate their findings to others in a way appropriate to their year group and abilities.

- develop the use of scientific language and recording techniques including computing, written reports and photographs.

The Curriculum

We develop scientific knowledge and conceptual understanding through the specific disciplines of Biology, Physics and Chemistry.

Working scientifically – all year groups
Living things and their habitats – yr4, 5, 6
Plants – yr1, 2, 3
Evolution and Inheritance yr6
Animals including humans – yr1, 2, 3,4,5,6
Seasonal changes including weather - yr1
Earth and Space – yr5
Light yr3, 6
Sound yr4
Electricity yr4, 6
Forces and magnets yr3, 5
Materials: their changes, properties and uses – yr1, 2, 5
States of Matter yr4
Rocks yr3

Children in foundation stage are taught the relevant science elements through the EYFS framework.

3. How science is structured through the school

Science teaching is about excellence and enjoyment through practical activities wherever possible.

KS1 science is taught for one hour and KS2 for two hours - timetabled weekly. Foundation stage topics include opportunities to explore working scientifically through knowledge and understanding of the world and every opportunity is taken to utilise these.

The school follows the 100 Science Lessons schemes of work in KS1 and KS2 and Foundation stage uses 'Problem Pup' to enthuse children when answering a question to solve scientifically. Other planning schemes e.g. Folens or Hamilton are also used.

Teachers are expected to adapt and modify the model plans to suit the creative curriculum, their children's interests, current events, their own teaching style, the use of any support staff and the resources available. Teachers must ensure that any modification does not overlook any statutory areas as indicated in the National Curriculum document.

Generally, the key content is taught as in the current science long term plan with one area being taught in each half term. Some classes do not have enough units to do this so opportunities will be taken to explore elements further and give children a chance to develop their knowledge through self-initiated further investigation within curriculum guidelines

It is acknowledged that some science may have to be taught as a stand alone topic outside the creative curriculum and some may overlap terms due to varying term length. Mixed-age classes use careful planning to avoid repetition – topics are combined and differentiation built in.

4. Our approach to science

The essential elements describing how science is taught in our school are described below.

- Children are given the opportunity to practice science skills and enhance their presentation using carefully chosen software and equipment including microscopes/visulisers, video capture of images, and data logging.
- Video sequences are used to demonstrate scientific activities on the interactive-whiteboard - combined with first-hand scientific enquiries.
- Children are encouraged to ask and answer their own questions.
- Children complete at least two full enquiries each term, taking increasing responsibility for their planning, carrying them out and recording/interpreting the results as they progress through the school.
- Homework is used to support school and class activities.
- Cross-curricular links are made to science.
- Science is developed through the science club, visits from the local authority museum bus, theatre groups, specific experts, visits to science museums and other places of interest.
- Staff are encouraged to undertake CPD to maintain skills.
- Outdoor learning is used whenever possible including gardening activities for growing plants and the meadow wild area for identifying and classifying wildlife,

5. Equal opportunities in science

- Science is taught within the guidelines of the school's equal-opportunities policy.
- We value science as a vehicle for the development of language skills, and encourage children to talk constructively about their science experiences.
- We recognise the particular importance of first-hand experience for motivating children with learning difficulties.
- We recognise that science may strongly engage gifted and talented children, and we aim to challenge and extend them.
- We exploit science's special contribution to children's developing creativity; we develop this by asking and encouraging challenging questions and encouraging original thinking.

6. Assessment and recording in science

Skills ladders, pertinent to each year group, are completed during formative assessment of each child's attainment. This takes place at suitable opportunities during the unit of work and gives an ongoing picture of a child's skills, knowledge and understanding.

Marking for assessment and next steps is in line with the school's marking policy and children are involved in the process of self-improvement, recognising their achievements and acknowledging where they could improve. When capable, they self-mark and evaluate work.

Once a year, work is moderated together to ensure that our judgement is consistent.

The school science subject leader monitors progress through the school by sampling children's work at regular intervals. Children who are not succeeding, and children who demonstrate high ability in science, are identified and supported.

Children's attainment is recorded at the end of the year based on assessment records and work samples and it is formally recorded at the end of KS1 and KS2 programme of study. A science tracker records children's achievement, in all areas, by the end of the year.

Reports to parents are made verbally each term, and written twice a year, describing each child's attitude to science, his/her progress in working scientifically and their understanding of the content of science studied so far.