Hawridge and Cholesbury CE School

Science Policy

Date: February 2020

Review Date: September 2022

1 Aims

1.1 Science teaches an understanding of natural phenomena. It aims to stimulate a child's curiosity in finding out why things happen in the way that they do. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way in which science will affect the future on a personal, national and global level.

1.2 The objectives of teaching science are to enable children to:

- Ask and answer scientific questions;
- Plan and carry out scientific investigations, using equipment correctly;
- Know and understand the life processes of living things;
- Know and understand the physical processes of materials, electricity, light, sound and natural forces;
- Know about the nature of the solar system including the Earth;
- Evaluate evidence and present their conclusions clearly and accurately.

2 Teaching and Learning Style

2.1 We use a variety of teaching and learning styles in science lessons. Our principal aims are to develop children's knowledge, skills and understanding. We do this through whole class teaching and group work. We actively engage the children in enquiry based research activities. We encourage the children to ask as well as answer scientific questions. They have the opportunity to use a variety of data, such as statistics, graphs, pictures and photographs. They sometimes use ICT in science lessons because it enhances their learning. They take part in discussions and they present reports to the rest of the class in a wide variety of formats. They engage in a wide variety of problem solving activities. Wherever possible we involve the pupils in real scientific activities, for example, investigating a local environmental problem, or carrying out a practical investigation and analysing the results. We also take great pride in using our wonderful environment, taking advantage of our fields, pond, quiet area and Forest School as well as the local Common.

2.2 We recognise that in all classes children will have a wide range of scientific abilities, and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways:

- Setting tasks which are open-ended and can have a variety of responses
- Setting tasks of increasing difficulty (we do not expect all children to complete all tasks);
- Grouping children by ability in the room and setting different tasks for each ability group;
- Providing resources of different complexity, matched to the ability of the child;
- Using classroom assistants to support the work of individual children or groups of children;
- Mixed ability groups and mixed ability pairs.

3 Science Curriculum Planning

3.1 The school follows the 2014 National Curriculum in England: science programmes of study. We supplement this with Twinkl Planning which covers all the areas of the National Curriculum. We study science as a discrete subject.

3.2 We carry out curriculum planning in science in three phases (long, medium and short term). The long term plan maps the scientific topics studied in each term during the key stage and follows the 2014 National Curriculum. The topics are outlined in the Science Curriculum Overview.

3.3 Our medium term plans, which are based on the 2014 National Curriculum, are taken from the published scheme by Twinkl and give details of each unit of work for each term. These are available online and printed by class teachers.

3.4 The class teacher is responsible for writing the daily lesson plans for each lesson (short term plans). These plans list the specific learning objectives and expected outcomes of each lesson. The class teacher keeps the individual plans, and he / she and the science subject leader may discuss them on an informal basis.

3.5 We have planned the topics in science so that they build on prior learning. We ensure there are opportunities for children of all abilities to develop their skills and knowledge in each unit, progression is built into the science scheme of work so that children are increasingly challenged as they move up through the school.

4 The contribution of science to teaching in other curriculum areas

4.1 English

Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. The children develop their oral skills in science lessons through discussion with a learning partner, group work and whole class talk. There are many opportunities to read and writing skills are developed in a variety of different and engaging ways. We ensure that children meet many different recording formats as they progress through our school.

4.2 Mathematics

Science contributes to the teaching of mathematics in a number of ways. When children use weights and measures they are learning to use and apply number. Through working on investigations they learn to estimate and predict and many investigations involve the use of standard units of measurement. They develop accuracy in their observation and recording of events. The children learn how to draw both bar and line graphs, charts and tables

4.3 Personal, social and health education (PSHE) and citizenship

Science makes a significant contribution to the teaching of PSHE and citizenship. The subject matter lends itself to raising matters of citizenship and social welfare. For example, children study the way people recycle material and how environments are change for better or worse. Science thus promotes the concept of positive citizenship.

4.4 Spiritual, moral, social and cultural development

Science teaching offers children many opportunities to examine some of the fundamental questions in life, for example, the evolution of living things and how the world was created. Through the amazing processes that affect living things, children develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through the teaching of science, children have the opportunity to discuss, for example, the effects of smoking, and the moral questions involved in this issue. We give them the chance to reflect on the way people care for the planet and how science can contribute to the way we manage the

Earth's resources. Science teaches children about the reasons why people are different and by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

5 Science and Computing

Information and communication technology enhances the teaching of science in our school because there are some tasks for which ICT is particularly useful. It also offers ways of impacting learning which are not possible with conventional methods. Software is used to animate and model scientific concepts and to allow children to investigate processes which it would be impracticable to do in the classroom. Programs are used in the collection of data and in producing tables and graphs. Children use ICT to record, present and interpret data, to review, modify and evaluate their work, and to improve its presentation. Children have opportunities to conduct secondary research in current topics using ICT.

6 Science and Inclusion

6.1 At our school we teach science to all children, whatever their ability and individual needs. Science forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our science teaching we provide learning opportunities that enable all pupils to make good or better progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents and we take all reasonable steps to achieve this.

6.2 When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment procedures look at a range of factors – classroom organisation, teaching materials, teaching style and differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected results. This ensures that our teaching is matched to the child's needs.

6.3 We enable all pupils to have access to the full range of activities involved in learning science. Where children are to participate in activities outside the class e.g a trip to a museum, we carry out a risk assessment prior to the visit, to ensure that the activity is safe and appropriate for all pupils

7 Assessment for Learning

7.1 Topics begin with an assessment of what children already know.

7.2 We assess for learning (AfL). Children are involved in the process of self-improvement, recognising their achievements and acknowledging where they could improve. Activities during, and at the end of, each topic record achievement and celebrate success.

7.3 We mark work positively, making it clear verbally, or on paper, where the work is good, and how it could be further improved. Children's work is compared with age appropriate exemplification. We moderate children's work termly to ensure consistency. Assessment records are reviewed regularly.

7.4 We have a tracking system to follow children's progress. The school science coordinator monitors progress through the school by sampling children's work at regular intervals. Children who are not succeeding, or children who demonstrate high ability in science, are identified and supported.

7.5 Assessment data is used to highlight areas where intervention or catch-up work is needed. Equally important is the continuous assessment of children's work, much of which is informal. This assessment is used to inform teaching throughout the school.

7.6 The Y2 & Y6 staff assess children's attainment and progress at the end of each key stage. This is based on assessment records and work samples from across the key stage and is support by the science coordinator and previous class teachers if needed.

7.7 Reports to parents are made verbally each term, and written once a year, describing each child's attitude to science, his/her progress in scientific enquiry and understanding of the content of science.

8 Resources

8.1 We have sufficient resources for all teaching units in the school. We keep these in a central store, where there is a box of equipment for each unit of work. The library contains a very good supply of science topic books. Computer software is available to support children's independent research and all class rooms have computers and netbooks.

9 Monitoring and review

9.1 It is the responsibility of the subject leader to monitor the quality of teaching and learning in science and this is done in accordance with the school's monitoring schedule. The subject leader is responsible for supporting colleagues in their teaching, remaining informed about current developments in the subject, and for providing a strategic lead and direction for science in the school. The subject leader reports to the Head Teacher and the governors on an annual basis, evaluating the strengths and weaknesses in science, and indicating areas for further development.

9.2 This policy will be reviewed at least every two years.