Holy Family RC Primary Science Policy 2021

Great are the works of the Lord;
They are studied by all who delight in them.
Psalm 111:2

Science Policy 2020 / 2021

Policy on Science

1. Aims and objectives

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 Our objectives in the teaching of Science are for all our children:

* to ask and answer scientific questions
* to plan and carry scientific investigations, with the correct use of equipment (including computers)
* to know about life processes
* to know about materials, electricity, light, sound and natural forces
* to know about the nature of the solar system, including the earth
* to know how to evaluate evidence, and to present conclusions both clearly and accurately.

2. Teaching and learning style

2.1 We use a variety of teaching and learning styles in Science lessons. Our principal aim is to develop children's knowledge, skills and understanding. Sometimes, we do this through whole-class teaching, while at other times we engage the children in an enquiry-based research activity. 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 use ICT in Science lessons because it enhances their learning. They take part in role-play and discussions and they present reports to the rest of the class. They engage in a wide variety of problem-solving activities. Wherever possible, we involve the pupils in real scientific activities, e.g. investigating a local environmental problem or carrying out a practical experiment and analysing the results.

2.2 We recognise that in all classes, children 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
* setting different tasks for different ability groups – ensuring that children with Special Educational Needs are planned and provided for.
* 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.

3 Science Curriculum Planning

3.1 When teaching the topic of Science, school uses the national programmes of study for Science as a basis for its curriculum planning. The national scheme has been adapted to the local circumstances of the school in that we make use of the local environment in our fieldwork, although we choose a locality where the physical environment differs from that which predominates in our immediate surroundings.

3.2 We carry out our curriculum planning in Science in three phases (long term, medium term and short term). The long term plan maps all of the curriculum topics studied in each half term during each year group, and indicates which is the subject driver for each topic (Science, History or Geography) Currently, scientific study is integrated into topic based work, which also links with literacy / reading objectives as much as possible. Future developments with the subject will involve studying Science as a discrete subject, in order to develop and deepen scientific understanding.

3.3 Our medium term plans are based on the National Curriculum programmes of study and give details of each unit of work covered, including National Curriculum objectives, differentiated activities, links with reading/literacy and other cross-curricular links. The Science subject leader monitors and reviews these plans, ensuring that objectives are covered in their entirety and any gaps in learning are addressed, particularly gaps caused by extended absences during periods of Lockdown.

3.4 The class teacher is responsible for writing the daily lesson plans for each lesson (short-term plans). These plans list the specific national curriculum

learning objectives and expected outcomes of each lesson. The class teacher keeps these individual plans, and the Science subject leader reviews and monitors these.

3.5 We have planned the topics in Science so that they build on prior learning. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit, and we also build progression into the Science scheme of work, so that the children are increasingly challenged as they move up through the school.
There is a consistent curriculum across the school which ensures full coverage of the National Curriculum.
Planning for Science incorporates ideas from whole staff training 'Teaching through Quality Texts' to ensure that explicit links are made across the curriculum subjects (particularly Literacy), the development of hooks to engage interest is common practice; and the whole school's curriculum intent is at the heart of each topic, particularly vocabulary and reading development.

4 The Foundation Stage

4.1 We teach Science in the Nursery and Reception classes as an integral part of the topic work covered during the year. As part of the Foundation Stage, we relate the scientific aspects of the children's work to the objectives set out in the Early Learning Goals (ELGs) which underpin the curriculum planning for children aged three to five. Science makes a significant contribution to developing a child's knowledge and understanding of the world, e.g. through investigating what floats/sinks when places in water.

5 The Contribution of Science to Whole School Curriculum Intent

5.1 Reading, Language and Vocabulary Development

Science contributes significantly to the teaching of Literacy in our school by actively promoting the skills of reading, writing, speaking and listening. Many of the texts which are covered within Literacy lessons and Guided Reading sessions are topic based and have links with Science. The children develop oral skills in Science lessons through discussions and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and recording information. Children are encouraged to complete some extended pieces of writing which link to their topic of study each half term. Vocabulary development is key across the whole school and each class addresses key vocabulary for their topic in the form of knowledge organisers, word mats, visual displays and learning about key words during Science lessons / homework.

Children's knowledge of key words and information is tested and revisited on a regular basis, to ensure the transition of key words / information into their long term memory.

5.2 Aspirations and Culture Capital

The start of each new topic every half term begins with a 'hook' to learning. This is designed to engage the child, peak their interest in the topic and provide visual / hands-on experiences to help children retain information in their long-term memory. These hooks include visits or experiences inside and outside of the classroom and involve trips to places of interest, visits to school from outside companies and experiences of awe and wonder inside the classroom.

Science is taught in a way which is designed to inspire children to follow in the footsteps of great scientists. They are introduced to the many amazing contributions to the world that have been made by scientists, and they are given the knowledge and desire to want to go out into the world to do the same.

5.3 Social, Emotional and Behaviour Support.

Science is given the same value as Literacy and Numeracy in school and is taught following the same expectations which are consistent across the whole school. These expectations, which are simple and clear, encourage all children to be safe, be ready and be respectful in all areas of their learning.

Science makes a significant contribution to the teaching of PSHCE. This is mainly in two areas. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare. For example, children study the way in which people recycle material and how environments are changed for better or worse. Secondly, the subject gives children numerous opportunities to debate and discuss. They can organise campaigns on matters of concern to them, such as helping poor or homeless people. Science thus promotes the concept of positive citizenship. This links in well with the CARITAS scheme of work which school follows.

5.4 Spiritual, Moral, Social and Cultural Development

Teaching Science offers children many opportunities to examine some of the fundamental questions in life, e.g. the evolution of living things and how the world was created. Through many of 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 in which 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.
Our Science curriculum encourages our budding young scientists to work as part of group, striving to achieve a common goal. They are encouraged to build their resilience when investigations do not support hypotheses and to use unexpected results as another tool for learning.

5.5 ICT

ICT enhances the teaching of Science in our school significantly, because there are tasks for which ICT is particularly useful. It also offers ways of impacting on 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 impractical to do directly in the classroom. Children use ICT to record, present and interpret data; to review, modify and evaluate their work; and to improve its presentation. Children learn how to find, select and analyse information on the Internet and on other media. Children have access to Ipads to further enhance their scientific knowledge.

6 Science and Inclusion

6.1 At our school, we teach Science to all children, regardless of 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 progress. We strive hard, and make all reasonable steps to meet the needs of those pupils with Special Educational Needs, those with disabilities, those with special gifts and talents and those learning English as an additional language.

6.2 When progress falls significantly outside the expected range, the child may have Special Educational Needs. Our assessment process looks at a range of factors – classroom organisation, teaching style, teaching materials, differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the age related expectations allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs.

6.3 We enable all children to have access to the full range of activities involved in learning Science. Where pupils are to participate in activities outside the classroom (a trip to a Science museum for example), we carry out a risk

assessment prior to the activity to ensure that it is safe and appropriate for all pupils.

7 Assessment

7.1 Teachers will assess children's work in Science by making informal judgements during lessons. On completion of a piece of work, the teacher assesses and uses this assessment to plan for future learning. Written or verbal feedback is given to the child, using the whole school marking policy, to help guide his/her progress. Older children are encouraged to make judgements about how they can improve their work.

7.2 At the beginning of each topic of work, children will undertake a Topic Knowledge Quiz, which assesses the child's prior knowledge of age-related key scientific facts. The children will be assessed again after the topic. This makes evident the progress made within a topic for each child, for understanding and retaining key scientific facts. Key concepts are regularly revisited throughout the year to ensure that information is retained in the long term memory

7.3 The Science subject leader monitors the progress within each year group by scrutinising Science books regularly, observing lessons, interviewing children to assess their 'sticky knowledge' and keeping samples of children's work which demonstrate the expected level of achievement in Science for each age group in school.

8 Resources

8.1 We have sufficient resources for all Science teaching units in school. We keep these in a central store where there is a tray/box of equipment for each unit of work. The library contains a good supply of Science topic books and there is a good selection of Science topic books available in each classroom too. The Ipads within schools are updated with new apps and websites that will support and enhance the teaching of each unit.

9 Monitoring and Review

9.1 The co-ordination and planning of the Science curriculum are the responsibility of the subject leader, Sharon Leeming, who also:
- supports colleagues in their teaching by keeping them informed about current developments in Science and providing strategic lead and direction for the subject;

- monitors the planning and teaching of the subject
- gives the Head teacher an annual summary report in which she evaluates the strengths/weaknesses in Science and indicates areas for further improvement.
- creates an Action Plan which focuses on developing the subject of Science.
- ensure that Science remains a high priority and is recognised and celebrated.

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

Signed: Jane Hall / Sharon Leeming

Date: 11th February 2021