Science Policy

St Mary's CE (A) Primary School

2017-2018

The Role of Science

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.

Aims

Our aim in the teaching of science are for all our children:

- to ask and answer scientific questions;
- to plan and carry out scientific investigations, with the correct use of equipment (including computers);
- to work scientifically and use appropriate scientific vocabulary. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources.
- to know the seasonal changes; weather
- to know about life processes; including plants, animals and humans including evolution and inheritance.
- to know about the properties and changes of everyday materials and their uses, electricity, light, sound, and natural forces including states of matter.
- 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.

Every Child Matters

Science at St Mary's facilitates the Every Child Matters agenda through:

- **Making a positive contribution**: The children at St Mary's are actively encouraged to participate in all areas of Science. They are supported and encouraged to work individually as well as part of a team to carry out scientific enquiries to further their knowledge of the World.
- **Being Healthy**: The strand of Science ensures that the children learn fully about all the different types of food, how the body uses food, how the body works and looks at how other influences such as drugs can affect the body which help the children to understand more about the importance of leading a healthy life.
- **Spiritual and Moral development**: In Science the children gain a good understanding of how to respect and praise their own and others work as part of the evaluation process.
- **Enjoying and Achieving**: One of the aims of Science at St Mary's is to make the learning process an enjoyable one. Children are encouraged to evaluate their own and others' work in a positive way and work is displayed for visitors to see and enjoy.
- **Staying Safe**: The children are taught to choose appropriate tools and processes needed for the task, but they are also taught how to use the tool in the correct way following health and safety at all times. There are also several topics which look at health and safety in the home regarding electricity.

Teaching and Learning

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. Wherever possible, we involve the pupils in real and practical scientific activities these are linked to our Creative Learning Journey where priority is given to a practical approach. Teaching and learning of Science at St Mary's also encourages children to read and spell scientific vocabulary at a level consistent with their increasing word-reading and spelling knowledge at each key stage. We offer the opportunity for all pupils to apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data.

Resources

All resources needed are kept in the Science cupboard located along the Key Stage 1 corridor and are labelled accordingly. All equipment should be returned to the store and the teacher should ensure that all the equipment is accounted for before returning. Any equipment needed that we do not possess should be asked for in advance, so that every effort can be made to fulfil the request. It is at the Science Co-ordinator's discretion as to whether the request for resources is fulfilled.

There will be an audit to be completed by each teacher after their use of the box, which is to enable the Co-ordinator to replenish any resources ready for the next use.

Foundation Stage

Within the foundation stage, children are taught the basic skills which are crucial to later development within the subject through practical activities which are teacher led. Teachers will encourage children to talk about the features of their own environment and how environments might vary from one another. Children will make observations of animals and plants and explain why some things occur, and talk about changes. It is crucial that the child has the opportunity to explore, experiment, observe and investigate materials that will be used, to begin to acquire the properties and characteristics of these materials, so that resource selection will become easier as they get older.

Planning

Science is a core subject in the National Curriculum. The school has implemented the new Science Curriculum for 2014 for some year groups. However, Years 5 and 6 are still working from the QCA scheme of work as they will be assessed on this when entering KS3. The new proposed National Curriculum for Science will be fully in place by 2015. The new Science Curriculum offers teachers to plan and teach with a flexible approach. We carry out our curriculum planning in science in two phases; Long term and medium term. The long-term plan maps the scientific topics studied in each term during the Key Stage across they year. The topics for each term are chosen to fit in with the theme being covered in our CLJ where ever possible, if this is not possible then the children will study science as a discrete subject. Our medium-term plans, which we have based on the national programmes of study in science, give details of each unit of work for each term.

The science subject co-ordinator keeps and reviews these plans to ensure complete coverage of the National Curriculum for each year group. These plans list the specific learning objectives including

working scientifically objectives and expected outcomes of each lesson and are linked to the Creative Learning Journey; programme of study. Teachers ensure planning is differentiated for ability levels and children can access this learning confidently.
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 programme of study, so that the children are increasingly challenged as they move up through the school.

Cross Curricular Links

Due to our creative curriculum, teachers can make meaningful links between the subject of their topic and the topic being covered in Science, where possible.
Science has links with many other subjects; Literacy, Numeracy, ICT, Design & Technology, and Citizenship. These links are crucial as they make the learning in an isolated context more meaningful and relevant.

Literacy – Science contributes to the teaching of Literacy by reinforcing skills taught within the Literacy lessons such as speaking and listening skills, asking appropriate questions, researching for information, making notes, writing and following instructions and having the opportunity to be exposed to new vocabulary.

Numeracy – Science provides an excellent opportunity for the children to apply their mathematical skills. They are required to measure accurately materials when carrying out scientific enquiries, presenting information and data collected during their enquiry during the practical sessions. All these skills are needed in order to problem solve.

Design & Technology – Science is in stringently linked with Design & Technology, every unit covered in science can be linked to a unit in Design & Technology. A lot of the knowledge and understanding learnt through science is needed to fully understand and complete the Design & Technology units for example, electricity, sorting of materials, characteristics of materials, forces, sound, keeping healthy. As pupils progress, they should be able to think critically and develop a more rigorous understanding of Design and Technology making links with Science.

ICT – Where possible ICT should be incorporated into Science lessons. There are many computer programs, which can be used as part of the science lesson such as; using video clips to show phenomena which is not possible to see with the Human eye, using control programmes to monitor temperature etc, using digital microscopes, and using the internet to research areas being covered to name a few. With the use of digital photography, childrens' work can be documented easily and this can be used to reflect at a later date.

Citizenship – Although some work in Science needs to be completed individually, there are many opportunities for group work, where the children need to learn to work as a team, compromise on ideas, listen to others and appreciate others work during the evaluation process. Children are encouraged to respect each other and share each others ideas and explanations and be responsible whilst working safely and maturely with the equipment.

Assessment, Recording and Reporting

The new Assertive Mentoring assessment applies to the new curriculum. Teachers will complete an assessment criteria for each pupil and assess their progress each term. Teachers will also assess children's work in science by making informal judgements during lessons. On completion of a piece of work, both the teacher and child assesses it, using the self assessment stickers. This assessment

will be used to plan for future learning. Written or verbal feedback is given to the child to help guide his/her progress. The teacher will track progression through completing the assessment criteria tracking sheets.
End of each term the children will complete a test and this will show where they are within the sub stage: ie Emerging, Developing, Secure or Ready for the next stage.
In addition, the teacher will have a separate sheet to assess working scientifically objectives. This assessment is progressive and the teacher will mark the science test which covers all the work taught that term.
If the children have gaps in learning then individual targets will be set and shared with parents during assertive mentoring meetings. We report the results of these tests to parents, along with the teacher assessments which we make whilst observing children's work throughout the year.
There are no formal Science SATs tests, however, 'science sampling' was reintroduced this year. Under this system, 9,500 children – five children from 1,500 schools – are randomly selected to take a science test. Schools that are selected will be notified by mid-May, and are legally obliged to participate if chosen. Science sampling takes place every two years, so there will be no compulsory science tests in 2015. Children will be awarded a level for science based on their teacher's assessment.

Monitoring

It is the Co-ordinators responsibility to ensure that assessment criteria sheets for each year groups are completed. All tracking sheets are to be displayed in science books to ensure progression of children's learning. Monitoring of the quality of teaching will take place. Planning and book scans will be carried out and monitored against the criteria outlined in the monitoring points. Feedback from book and planning trawls will feedback to whole school as well as the individual departments. Written feedback will be given to the department.

Signed: *Sonia Oxford* **Chair of Governors**

Policy Date: July 2017

We work with due regard to the equality act 2010 to make sure that all our pupils regardless of ethnicity, ability, home language and special educational needs are included and are able to access language lessons.