**St Thomas the Martyr CE Primary School**



**Science Policy**

**2021 - 2022**

**Head Teacher – Mr C Roscoe**

**Subject Coordinator – Mr J Purcell**

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**Our Vision**

Through a positive caring environment, we provide the opportunity for every child to reach their full potential. We embrace Christian values and ensure all children are ready for their next steps. This vision was split into six target areas by a cross section of pupils and staff to the following points:

* Exciting, interesting and engaging lessons
* Discovery through practical’s
* Use of vocabulary
* Recording information in different ways
* Using real life analogies to support theory
* Being able to discuss, explain and transfer learning confidently

**Rationale**

Science is a systematic investigation of the physical, chemical and biological aspects of the world which relies on first hand experiences and on other sources of information. The scientific process and pupils’ problem-solving activities will be used to deepen their understanding of the concepts involved. The main aspects of science to be studied will be determined by the programmes of study of the National Curriculum 2014.

Through science pupils at St Thomas the Martyr CoE Primary School will continue to deepen their respect, care and appreciation for the natural world and all its phenomena.

**Aims**

* to develop pupils’ enjoyment and interest in science and an appreciation of its contribution to all aspects of everyday life
* to build on pupils’ curiosity and sense of awe of the natural world
* to use a planned range of investigations and practical activities to give pupils a greater understanding of the concepts and knowledge of science
* to introduce pupils to the language and vocabulary of science
* to develop pupils’ basic practical skills and their ability to make accurate and appropriate measurements
* to develop pupils’ use of computing in their science studies.
* to extend the learning environment for our pupils via our environmental areas and the locality
* to promote a ‘healthy lifestyle’ in our pupils.

**Objectives**

The following objectives derived from the above aims will form the basis of our decisions when planning a scheme of work. Assessment will also be related to these objectives:

* to develop pupils’ enjoyment and interest in science and an appreciation of its contribution to all aspects of everyday life.
* to develop a knowledge and appreciation of the contribution made by famous scientists to our knowledge of the world including scientists from different cultures
* to encourage pupils to relate their scientific studies to applications and effects within the real world
* to develop a knowledge of the science contained within the programmes of study of the National Curriculum.

To build on pupils’ curiosity and sense of awe of the natural world

* to develop in pupils a general sense of enquiry which encourages them to question and make suggestions
* to encourage pupils to predict the likely outcome of their investigations and practical activities

To use a planned range of investigations and practical activities to give pupils a greater understanding of the concepts and knowledge of science

* to provide pupils with a range of specific investigations and practical work which gives them a worth-while experience to develop their understanding of science
* to develop progressively pupils’ ability to plan, carry out and evaluate simple scientific investigations and to appreciate the meaning of a ‘fair test’.

To develop the ability to record results in an appropriate manner including the use of
diagrams, graphs, tables and charts

* to introduce pupils to the language and vocabulary of science
* to give pupils regular opportunities to use the scientific terms necessary to communicate ideas about science
* to develop pupils’ basic practical skills and their ability to make accurate and appropriate measurements
* within practical activities give pupils opportunities to use a range of simple scientific measuring instruments such as thermometers and force meters and develop their skill in being able to read them.

To develop pupils’ use of ICT in their science studies

* to give pupils opportunities to use ICT (video, digital camera, data logger) to record their work and to store results for future retrieval throughout their science studies
* to give pupils the chance to obtain information using the internet.

Principles of teaching and learning
Differentiation and Additional Educational Needs

The study of science will be planned to give pupils a suitable range of differentiated activities appropriate to their age and abilities. Tasks will be set which challenge all pupils, including the more able. For pupils with SEN the task will be adjusted or pupils may be given extra support. The grouping of pupils for practical activities will take account of their strengths and weaknesses and ensure that all take an active part in the task and gain in confidence.

Breadth and Balance
Variety.

Pupils will be involved in a variety of structured activities and in more open-ended investigative work:

* activities to develop good observational skills
* practical activities using measuring instruments which develop pupils’ ability to read scales accurately
* structured activities to develop understanding of a scientific concept
* open ended investigations.

On some occasions pupils will carry out the whole investigative process themselves or in small groups.

**Relevance**

Wherever possible science work will be related to the real world and everyday examples will be used.

**Cross-curricular skills and links**

Science pervades every aspect of our lives and we will relate it to all areas of the curriculum. We will also ensure that pupils realise the positive contribution of both men and women to science and the contribution from those of other cultures. We will not only emphasise the positive effects of science on the world but also include problems, which some human activities can produce. Children will be encourage to apply skills from other areas of the curriculum, including; maths and English, when presenting, recording or explaining concepts taught.

**Continuity and Progression**

Foundation Stage pupils investigate science as part of Understanding of the World. Children are encouraged to investigate through practical experience; teachers guide the children and plan opportunities that allow the children to experience and learn whilst experimenting for themselves. By careful planning, pupils’ scientific skills and knowledge gained at Key Stage 1 will be consolidated and developed during Key Stage 2.

Pupils in Key Stage 1 will be introduced to science through focused observations and explorations of the world around them. these will be further developed through supportive investigations into more independent work at Key Stage 2. The knowledge and content prescribed in the National Curriculum will be introduced throughout both key stages in a progressive and coherent way.

**Equality of Opportunity**

All children have equal access to the science curriculum and its associated practical activities. The SLT, Class Teachers and TAs at St Thomas the Martyr CoE Primary School are responsible for ensuring that all children, irrespective of gender, learning ability, physical disability, ethnicity and social circumstances, have access to the whole curriculum and make the greatest possible progress. Where appropriate, work will be adapted to meet pupils’ needs and, if appropriate, extra support given. More able pupils will be given suitably challenging activities. Gender and cultural differences will be reflected positively in the teaching materials used.

All children have equal access to the Science Curriculum, its teaching and learning, throughout any one year. This is being monitored by analyzing pupil performance throughout the school to ensure that there is no disparity between groups.

**Health and safety**

Pupils will be taught to use scientific equipment safely when using it during practical activities. Class Teachers and Teaching Assistants will check equipment regularly and report any damage, taking defective equipment out of action. A simple risk assessment will be carried out for all practical activities any perceived hazards will be reported to the Head who will determine the appropriateness of said activity.

**Assessment for Learning, recording and reporting**

Throughout the school teachers will assess whether children are working at/above or below the expected level for their age based on their understanding and application of the content of the National Curriculum 2014. Progress and attainment is reported to parents through parents’ evenings and end of year reports.

**Marking for Improvement (see policy)**

Much of the work done in science lessons is of a practical or oral nature and, as such, recording will take many varied forms thus making marking different. It is, however, important that written work is marked regularly and clearly, as an aid to progression and to celebrate achievement. When appropriate, pupils may be asked to self-assess or peer assess their own or other’s work.
Marking for improvement comments in a child’s book must be relevant to the learning objective to help children to better focus on future targets and will follow the school’s marking policy. Any practical work recorded will be available on SeeSaw.

**Role of the subject Leader**

Science will be led by one member of teaching staff but enhanced by all staff within school (Currently J. Purcell). Standards of teaching and learning will be adjudged using work sampling and data review.

**Resourcing**

Specialist pieces of equipment and those posing a potential safety risk will be held centrally and staff access when required. Resource materials to support the teaching of science and links to Working Scientifically, can be found alongside the resources to give staff both practical and subject knowledge support.

**The Curriculum:**

The curriculum will be based on the New 2014 National Curriculum and staff will have freedom of teaching their year group throughout the year. Working scientifically will be expected to be seen in every science lesson in one aspect or another. Below is a breakdown of the curriculum topics by year group and working scientifically expectations for end of KS1 and 2.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Biology | Chemistry | Physics |
| Year 1 | PlantsAnimals, including Humans | Every day Materials | Seasonal changes |
| Year 2 | Living things and their habitatsPlantsAnimals, Including Humans | Uses of everyday materials |  |
| Year 3 | PlantsAnimals, including Humans | Rocks | LightForces and magnets |
| Year 4 | Living things and their habitatsAnimals, including humans | States of matter | SoundElectricity |
| Year 5 | Living things and their habitatsAnimals, including humans | Properties and changes of materials | Earth and SpaceForces |
| Year 6 | Living things and their habitatsAnimals, including humansEvolution and inheritance | Additional Link units to be completed in conjunction with UHHS to prepare pupils for secondary transition. | LightElectricity |

**The Curriculum: Working Scientifically progression**

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| **Working scientifically Year 1** |
| I can ask simple scientific questions. |
| I can use simple equipment to make observations. |
| I can carry out simple tests with support. |
| I can identify and classify things. |
| I can suggest what I have found out. |
| I can find out by watching, listening, tasting, smelling and touching. |
| I can talk about similarities and differences. |
| I can explain what I have found out using scientific vocabulary. |
| I can make accurate measurements. |
| **Working scientifically Year 2** |
| I can ask simple scientific questions. |
| I can use simple equipment to make observations. |
| I can carry out simple tests. |
| I can identify and classify things. |
| I can suggest what I have found out. |
| I can use simple data to answer questions |
| I can make predictions |
| I can say whether things happened as I expected and if not why not. |
| I can suggest more than one way of grouping animals and plants and explain my reasons. |
| I can use information from books and online sources to find things out. |
| **Working scientifically Year 3** |
| I can ask relevant scientific questions. |
| I can use observations and knowledge to answer scientific questions.  |
| I can set up a simple enquiry to explore a scientific question.  |
| I can set up a test to compare two things. |
| I can set up a fair test and explain why it is fair. |
| I can make careful and accurate observations, including the use of standard units. |
| I can use equipment, including thermometers and data loggers to make measurements. |
| I can gather, record, classify and present data in different ways to answer scientific questions. |
| I can use diagrams, keys, bar charts and tables; using scientific language. |
| I can use findings to report in different ways, including oral and written explanations, presentation. |
| I can make a prediction with a reason. |
| I can identify differences, similarities and changes related to an enquiry. |
| I can record and present what I have found using scientific language, drawings, labelled diagrams, bar charts and tables. |
| I can use my findings to draw a simple conclusion. |
| **Working scientifically Year 4** |
| I can ask relevant scientific questions. |
| I can use observations and knowledge to answer scientific questions.  |
| I can set up a simple enquiry to explore a scientific question.  |
| I can set up a test to compare two things. |
| I can set up a fair test and explain why it is fair. |
| I can make careful and accurate observations, including the use of standard units. |
| I can use equipment, including thermometers and data loggers to make measurements. |
| I can gather, record, classify and present data in different ways to answer scientific questions. |
| I can use diagrams, keys, bar charts and tables; using scientific language. |
| I can use findings to report in different ways, including oral and written explanations, presentation. |
| I can draw conclusions and suggest improvements. |
| I can make a prediction with a reason. |
| I can identify differences, similarities and changes related to an enquiry. |
| I can plan and carry out a scientific enquiry by controlling variables fairly and accurately. |
| I can record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models. |
| I can report findings from scientific enquiries through written explanations and conclusions. |
| **Working scientifically Year 5** |
| I can plan different types of scientific enquiry. |
| I can make predictions using information. |
| I can vary one factor whilst keeping the others the same in an experiment. |
| I can measure accurately and precisely using a range of equipment.  |
| I can record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.  |
| I can report findings from enquiries in a range of ways. |
| I can explain a conclusion from an enquiry. |
| I can read, spell and pronounce scientific vocabulary accurately.  |
| I can explore different ways to test an idea, choose the best way and give reasons. |
| I can use the outcome of test results to make predictions and set up a further comparative fair test. |
| I can explain causal relationships in an enquiry. |
| I can relate the outcome from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument or theory. |
| I can explain (in simple terms) a scientific idea and what evidence supports it. |
| **Working scientifically Year 6** |
| I can plan different types of scientific enquiry. |
| I can control variables in an enquiry, identifying dependent and independent variables. |
| I can measure accurately and precisely using a range of equipment.  |
| I can record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.  |
| I can use the outcome of test results to make predictions and set up a further comparative fair test. |
| I can report findings from enquiries in a range of ways. |
| I can explain a conclusion from an enquiry. |
| I can explain causal relationships in an enquiry. |
| I can relate the outcome from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument or theory.  |
| I can read, spell and pronounce scientific vocabulary accurately.  |
| I can use information from different sources to answer a question and plan a scientific enquiry. |
| I can make a prediction that links with other scientific knowledge. |
| I can plan in advance which equipment I will need and use it appropriately. |
| I can link my conclusions to other scientific knowledge. |