



**St. Mary's Roman Catholic  
Primary School, Chepstow**

**Science Policy**

**Last Updated.....**

## *St Mary 's Catholic Primary School Mission Statement*

*Based on our faith, St Mary 'S Catholic Primary School seeks to promote a spirit of love and justice in providing opportunities for the development of each individual. As a caring community of learning, combining innovation and experience, we possess a distinctive Catholic philosophy which permeates the whole educational enterprise.*

*As a school we seek,*

*To communicate the Catholic faith, providing a formation which enables each child to realise their full potential in all aspects of spiritual and moral development.*

*To offer a breadth of vision, providing a balanced, differentiated and relevant curriculum, in the pursuit of academic excellence.*

*To recognise and encourage the unique value of the individual, nurturing and developing each child's self-worth and ability.*

*To strengthen the Christian community, which unites our school with the home, the parish and the wider community.*

## SCIENCE POLICY

'In the beginning was the Word, and the Word was with God, and the Word was God. He was in the beginning with God, all things were made through him, and without him was not anything made that was made. In him was life, and the life was the light of men.'

This document is a statement of the aims, principals and strategies for teaching and learning of science at St. Mary's. This particular science policy was first developed during the Autumn of 1995 through a process of consultation with teaching staff. Following alterations due to the requirements of "Curriculum 2000," It was re-approved by the governing body curriculum committee in 2001. A schedule for the review of this, and all other, policy documents is set out in the school's Development Plan

### What is Science?

Science is a body of knowledge, which is built up through experimental testing of ideas, and which is organised in a way that makes it easy to use. Science is also a methodology, a practical way of finding reliable answers to questions we may ask about the world around us.

### Aims

Our aims in teaching science are that all children will:-

- retain and develop their natural sense of curiosity about the world around them
- develop a set of attitudes which will promote scientific ways of thinking, including open-mindedness, perseverance, objectivity and a recognition of the importance of teamwork
- come to understand the nature of "scientific method" involving: meticulous observation, the making and testing of hypotheses, the design of fair and controlled experiments, the drawing of meaningful conclusions through critical reasoning and the evaluation of evidence
- become effective communicators of scientific ideas, facts and data
- begin to build up a body of scientific knowledge and understanding which will serve as a foundation for future enquiry

## Principles of the Teaching and Learning of Science

Science is important because:

- it is a body of knowledge essential to our understanding of the world around us
- it has built up a methodology for thinking which today forms the basis of most intellectual enquiry
- the skills and knowledge of science have wide applicability in everyday life
- science is a core subject in the National Curriculum. The fundamental skills, knowledge and concepts of the subject are set out in "Science in the National Curriculum" where they are categorised into 4 attainment targets

1. scientific investigation
2. life and living processes
3. materials and their properties
4. physical processes

## Strategies for the Teaching of Science

The science curriculum is organised on a topic basis wherein:

- science work is integrated into the two year programme of topics followed throughout the school (see Appendix for details)
- science is studied on half-termly topics, this means that six science topics are studied each year
- approximately 1½ hrs per week is to science
- in addition to this integrated science, extra activities focusing on AT1, Scientific Investigation, are carried out in some classes to ensure full National Curriculum coverage
- the teacher identifies the most appropriate strategy to suit the particular activity

The predominant mode of working in science is co-operative group work although individual work and class teaching are used where appropriate. Within this structure:

1. groups are usually of mixed ability with differentiation by role
2. relevant discussion is encouraged
3. groups are encouraged to communicate their findings in a variety of ways
4. some provision will be made for year 6 children to revise, recall and extend work from the previous year's programme before they take the national tests

There is no specialist teaching in science, it is taught by class teachers.

Classroom helpers may be used in science to assist:

- in supporting group activities
- in providing extra help for children with particular needs (see below)

Commercially available schemes of work are not used in science as teachers prefer to plan their own programmes to integrate with topic activities.

Pupils with special needs may receive extra support for science work from a non-teaching assistant working within the classroom. Such pupils include:

- pupils with language/communication difficulties who are given support with reading and writing during science lessons
- pupils with particular ability and flair for science who work more quickly through the levels of the National Curriculum and are extended through the use of supplementary work cards and computer software
- pupils with S.E.N. are involved in the work planned for their class. Where possible, work is given at an appropriate level to enable children to reach their full potential. Teacher's weekly plan show where the activities have been adopted for children of different abilities. Teachers also adjust the level and style of their questions when talking to children. Teachers also expect different levels of performance from children of different abilities

### Equal Opportunities

Every effort is made to ensure that science activities and investigations are equally interesting for both boys and girls.

Homework is used to support science through tasks such as:

- finding answers to questions posed in school through the use of books (libraries) and interviews with friends and family
- (for Year 6 pupils) writing up the findings of science experiments carried out at school

The emphasis in our teaching of science is on first hand experience and we encourage children increasingly to take control of their own learning. Our focus is on AT1 of the National Curriculum, Scientific Investigation, thus:

- most study of science is through practical investigative work
- careful observation is fostered
- resources are made readily available and accessible
- pupils are encouraged to communicate their scientific findings to others using a variety of methods including written or verbal reports and use of graphs or pictures

Excellence in science is celebrated in display and performance including:

- the mounting of graphical display of the results of scientific enquiry
- communication of scientific findings during whole class gatherings
- open science day

### Strategies for Ensuring Progress and Continuity

Planning in science is a process in which all teachers are involved, wherein:

- the foundation for curricular planning is the Whole School Five Year Development Plan, developed through a process of collaboration between staff, and approved by governors
- a two year cycle of topic plans is drawn up by staff working groups and is carefully balanced to ensure full coverage of Curriculum 2000.
- schemes of work for science are developed by the co-ordinator (in collaboration with the whole staff) and are integrated with the two year topic cycle (see Appendix for details)
- a termly staff meeting is used to discuss the science curriculum and ensure consistency of approach and of standards
- work plans (including detailed lesson plans) are drawn up by individual teachers for each half term during which science is studied (4/6) and are monitored by the headteacher

The role of the science co-ordinator is to:

- take the lead in policy development and the production of schemes of work designed to ensure progression and continuity in science throughout the school
- support colleagues in their development of detailed work plans, their implementation of the scheme of work and in assessment and record keeping activities
- monitor progress in science and advise the headteacher on action needed
  
- take responsibility for the purchase and organisation of central resources for science
- keep up-to-date with developments in science education and disseminate information to colleagues as appropriate

Feedback to pupils about their own progress in science is achieved through the marking of work. Effective marking:

- is usually done while a task is being carried out through discussion between children and teacher
- aims to help children learn by encouraging them to think critically about what they have achieved
- of written work is used sensitively and with discretion so that a child can assimilate a limited number of corrections at one time - this will vary according to age and ability

Formative assessment is used to guide the progress of individual pupils in science. It involves identifying each child's progress in each area of the science curriculum, determining what each child has learned and what therefore should be the next stage in his/her learning. Formative assessment is mostly carried out informally by teachers in the course of their teaching. Suitable tasks for assessment include:

- small group discussions usually in the context of a practical task
- specific assignments for individual pupils
- individual discussions in which children are encouraged to appraise their own work and progress

### Early Years

The reception teacher plans work in line with areas of the National Curriculum but adjusts the activities accordingly. Reception children should be involved in any science activity which has an appropriate interest value and which has the capacity to excite and provide enjoyment. Every effort is made to help children develop the language associated with science. The Newport LEA Science SOW is used as the basis for the Schemes of Work in Reception, Year 1 and Year 2 classes. It is also used to a lesser extent at Key Stage 2.

### Strategies for Recording and Reporting

Teachers use the level descriptions in coming to judgements about a child's overall performance

Reporting to parents is done on a yearly basis through interviews and annually through a written report. At the beginning of each topic, the child has to write and draw all he knows about the subject eg. water. After six weeks, the pupil is asked again to write all he knows to show progression of knowledge and understanding. Reporting in science will focus on each child's:

- attitudes to science

- progress in AT., the ability to investigate scientifically including understanding of the nature of "scientific method".

Formal summative assessment is carried out at the end of each National Curriculum Key Stage (ie. in Years 2 and 6) through the use of SATs and/or teacher assessment.

#### Strategies for the Use of Resources

Classroom resources in science include:

- a dedicated area suitable for scientific work and display
- a set of materials relevant to the scheme of work for that

Central resources in science are the responsibility of the science co-ordinator who has a small budget available. They include:

- class sets of scientific instruments likely to be used sporadically by all classes, such as pooters, magnifiers, stop clocks, spring balances
- major, expensive items such as the microscope (see Appendix for details)
- older children are encouraged to choose from a range of equipment when designing investigations. Children are trained in the safe and considerate use of animals, plants and equipment and not to be careless with consumables.
- the science co-ordinator is responsible for the resource area

Information Technology is a major resource which is used in science for:

- communicating information (word processing and graphics/drawing packages)
- handling information (databases and data capture equipment)
- modelling (simulations and spreadsheets)

The Library houses a substantial stock of books on science based subjects and is used regularly for reference.

Consideration of health and safety issues is of the utmost importance in science. Guidelines (see Appendix) are provided on:

- appropriate handling of equipment and materials
- appropriate storage of equipment and materials

## Appendix 1

### Audit of Science Equipment

#### Light & Colour

Torches x 12  
Prisms x 2  
Mirrors x 6 large  
    x 2 small  
    x 18 curved  
Microscope x 1  
Kaleidoscope x 2  
Episcope projector x 1  
Pin Hole Camera x 12  
Prism shapes  
Colour Filters  
Candles x 12

#### Electricity

Bulbs x 100  
Switches x 8  
Crocodile clips x 15  
Wire  
Batteries x 12  
Bulb holders x 30  
Electricity box x 1  
Electricity Case x 1

#### Rock Minerals, Fossils

Coal x 7  
Set of rocks x 1  
  
Set of Minerals x 1  
Set of Fossils x 1  
Set of Gemstones x 1

#### Magnets

Box of assorted magnets x 1  
x 1

#### Weather

Pasta Shapes x 2  
Weather Chart x 1

#### Ourselves

Weighing Scales  
Height measure  
cardboard wheels  
plastic tubing  
netting  
  
Food  
Mixing bowls x 4  
Wooden Spoons x 4  
Sieves  
Funnels x 5  
Pet? dishes x 13  
Newton meters x 10  
Plasticine x 1  
Test tube x 10  
Safety Goggles x 6  
String

#### Mini-beasts

Wormery x 4  
Aut T ? Kit x 1  
Pipettes  
Flowerpots

#### Miscellaneous

Jars of:  
  
Art Straws x 1  
Plastic Straws x 1  
Bendy Straws x 1  
Lollipop Sticks x 2  
Polyspheres Large x 1  
Polyspheres small  
x 1  
  
Elastic bands x 1

Art Straws x 1

Weather Station x 1

Dried Peas x 1

Thermometers x 4

Balloons x 1

Pipecleaners x

Film cases x 2

Corks x 1

Cocktail Sticks x 1

Sound

Velcro x 1

Matchsticks x 2

Sound meter x 1

Marbles x 1

Pinecones x 1

Tuning Forks x 12

Cotton reels x 2

Watertanks x 4

Miscellaneous

Hardwood

Softwood

Robotix Kits x 3

Lego Technic x 1

Babies Bath x 1

#### Chemicals

Calcium Hydroxide

Copper Sulphate

Iron Filings x 5

Sodium Carbonate

Calcium Sulphate

Food colouring

Salt

Calcium Carbonate

Naphthalene

Cream of Tartar

Citric acid Crystals

Bicarbonate of Soda

Measuring Cylinders x 17

The Science "Be Safe" Booklet  
is available from the staffroom

Appendix 3

Methods of Recording Science

1. Make a chart
2. Make a list
3. Devise and fill in table of results
4. A factual account
5. A creative poem etc.
6. Diagram - Pictorial record
7. Graph
8. Designing a poster
9. Make a model
10. Video/tape recording
11. Writing a letter
12. Photographic record
13. Article for school newspaper
14. Close - procedure
15. Questionnaire
16. Group/Class record
17. Oral discussion
18. Concept mapping
19. Drama/Mime
20. Storing information on the computer
21. A cartoon strip

Signed: \_\_\_\_\_ (Head Teacher)

Signed: \_\_\_\_\_ Chair of the Governing Body

Date: \_\_\_\_\_

Review date: \_\_\_\_\_