

Saint Raphaela's School

Policy for the Teaching of Science

Introduction

This document was drawn up by all members of the teaching staff of St. Raphaela's Primary School and describes our agreed approach to the teaching of Science in this school. It is intended primarily for ourselves as a staff and for any new teachers who may join our school. It is also intended as a reference document for our partners in the education process. This policy was agreed by all staff in December 2004. It was ratified by the Board of Management in March 2004 and will be reviewed in 2007.

Vision Statement:

Our purpose as a school is to help children develop intellectually as well as spiritually and emotionally. We believe that through our teaching of Science children will grow in their ability to think, to reason, to predict, and to comprehend as well as their ability to wonder and to be amazed. Science for young children means exploring, discovering and investigating the world around them. These finding out activities help children to gather the experience they need to understand the world in which we live. They explore ideas, observe their effects and then test them. The concepts that young children develop are based on first hand exploration. In this way they come face to face with phenomena and learn directly about the way things are and why they behave as they do. We believe that:

- Science provides motivation to learn by stimulating a child's natural curiosity and love of asking questions.
- Scientific investigation allows a child to reflect more deeply on previously held ideas and helps children to live with the uncertainty of not having immediate answers to every question.
- Interaction with the environment, together with a consideration of the ideas and opinions of others, aids intellectual development.
- The skills and knowledge gained through science activity will help our children develop confidently within a scientific and technological society.

- Children will appreciate the contribution science makes to society.
- In a rapidly changing world with many far reaching effects, a scientific understanding helps children to see the implications of change and apply principles to new situations.
- Scientific understanding prepares to an active part in debates about issues that affects their lives such as alternative energy resources, pollution and conservation.
- Science highlights the purposeful use of mathematical skills, providing the opportunity to develop concepts further.
- It gives children the opportunity to work co-operatively, share ideas and stimulate oral and written communication.
- School science is a reflection of science in the "real world" where scientists learn from each other and extend the boundaries of knowledge by research.

Our Aims in Teaching Science:

- The aims of our science teaching are those listed on page 11 of the Science Curriculum Document. In particular we want to
- enable children to develop a scientific approach to problem solving which emphasises understanding and constructive thinking
 - encourage children to explore, develop, and apply scientific ideas and concepts through designing and making activities
 - foster children's natural curiosity, so encouraging independent enquiry and constructive thinking
 - cultivate an appreciation of and respect for the diversity of living and non living things their interdependence and interactions
 - develop a scientific approach to problem solving which emphasises understanding and constructive thinking
 - encourage each child to behave responsibly to protect, improve and cherish the environment and to become involved in the identification, discussion resolution and avoidance of environmental problems and so promote sustainable development.

Being prepared to evaluate one's work or ideas in order to find ways to improve it.
Willingness to tolerate uncertainty

Understanding that we do not always know the answers nor can we always find

certain solutions.

Responsibility

Being willing to attempt tasks and overcome difficulties alone, but knowing when to

ask for help.

Willingness to co-operate

Being aware of the needs of others, being prepared to fit in with them and to

negotiate difference through discussion.

Independence

Being able to make decisions after due considerations and being prepared to

defend options and ideas.

Sensitivity to the living and nonliving world

Developing a sense of wonder and respect for living things and a sense of

responsibility towards the whole environment.

Strategies for teaching Science -- Key considerations:

We will use children's own ideas as a starting point for all our Science activities.

All our activities will allow for practical work and for free exploration of materials.

Our practical investigations will lead to understanding the concept of a fair test.

Our lessons will involve whole class teaching, group work, and individual work.

We will make extensive use of our science rich school environment. We are

working on improving this environment and have already developed our own

garden and a nature table. We are now in the process of reviewing the amount of

waste which we create. We will try to reduce and recycle as much of it as we can.

We want every child in the school to take a pride in their environment and we will

try for the Green Flag award within the next year. Our science programme is

enriched by our proximity to Airfield nature Reserve with its specialist workshops

which we use regularly. We will try to integrate Science into as many other aspects

of the curriculum as possible, particularly Mathematics, IT, and English.

All children will be involved in learning Science. We will however make allowance

for differing abilities in the planning of lessons.

- We also aim that through our teaching of Science all children will learn the following skills and attitudes:

- Observing

- Sorting and grouping

- Raising questions

- Proposing enquiries to answer questions

- Predicting

- Hypothesising

- Devising investigations; planning fair tests (controlling appropriate variables)

- Measuring

- Finding patterns in observations

- Interpreting and evaluating findings

- Communicating and recording findings

- Drawing and conclusions from results

- Applying and using knowledge e.g. designing and marking/planning another investigation.

The development of these skills underpins all the science work in the school and should form a progressive framework for activity throughout the pupil's years in primary school.

Attributes and Attitudes which we hope to develop through Science

Curiosity

Showing an interest in new or unusual things and noting detail. Using questions to find out and explain about causes and relationships.

Originality

Producing ideas not previously held by thinking and using imagination.

Perseverance

Not giving up when a goal is difficult to attain or requires a large amount of effort.

Open mindedness

Being prepared to listen to other points of view and accepting ideas that are convincing.

Respect for evidence

Being prepared to accept evidence even when it conflicts with own predictions.

Self criticism

Being prepared to evaluate one's work or ideas in order to find ways to improve it.

Willingness to tolerate uncertainty

Understanding that we do not always know the answers nor can we always find

certain solutions.

Responsibility

Being willing to attempt tasks and overcome difficulties alone, but knowing when to

ask for help.

Willingness to co-operate

Being aware of the needs of others, being prepared to fit in with them and to

negotiate difference through discussion.

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Resources:

We have completed and environmental audit (cf attached sheet)We have also completed a conservation code (cf attached sheet). Our science resources are centrally stored in red boxes in the Principal's office.

Conservation Code Saint Raphaela's School

At Saint Raphaela's we will

- search carefully and cause as little disturbance to the environment as possible
- handle plants and animals with care
- replace logs and stones that are turned over
- return animals to their habitat as soon as possible
- recycle paper and cans as far as we possible can
- use a com poster for the recycling of waste food

Resources

There are six red boxes each labelled with a strand unit and these contain the following Equipment:

Electricity:

- Electricity box 97
- 80 bulb holders and bulbs
- 50 croc clips
- 10 batteries and battery holders
- 20 buzzers \clear wire and coloured wire
- 2 Wire strippers
- 5 switches
- white adhesive tape

Lesson plans for electricity for all classes provided by FORFAS
Lesson Plans on electricity QCA documents

Forces:

- 12 pulley blocks
- 12 force metres
- 25 Force metre springs
- 20 meagre motors
- Wheeled toys

Lesson Plans on Forces QCA documents

Magnetism:

- 2 horse shoe magnets
- 25 wand magnets
- 5 boxes bar magnets
- 3 sets coloured ring magnets
- 3 boxes iron filings
- Lesson plans for all classes on magnetism FORFAS
- Lesson plans for all on magnetism QCA

Plants and animals:

- 20 pooters , bug hunters
- 3 bug viewers
- Tape measure 30 magnifiers
- 1 set of lesson plans on living things QCA
- 1 set of QCA lesson plans on MYSELF

Light :

- 11 torches
- 8 see through torches
- 10 plastic mirrors
- 10 curved mirrors
- 1 prism
- 1 kaleidoscope
- 1 flying start science book on Light
- 15 coloured paddles
- bulk mirror pack
- 20 aa batteries
- QCA lesson plans on LIGHT

Forces:

- 12 pulley blocks
- 12 force metres
- 25 Force metre springs
- 20 meagre motors
- Wheeled toys

Lesson Plans on Forces QCA documents

Magnetism:

- 2 horse shoe magnets
- 25 wand magnets
- 5 boxes bar magnets
- 3 sets coloured ring magnets
- 3 boxes iron fillings
- Lesson plans for all classes on magnetism FORFAS
- Lesson plans for all on magnetism QCA

Two Copies of "Living Science" A guide to Science experiments at Primary Level are available in the staff room.

Copies of lesson plans from the British Q.C.A. documents are available in folders marked with the appropriate strand name and are available according to strand in the appropriate marked resource boxes in the principals office.

Planning:

Each teacher has done a yearly plan for science which is appended to this document. It gives an overview of work to be covered in the school year. Each teachers will complete a monthly science plan based on her yearly scheme.

Sound

- 2 tuning forks
- 1 Fun with science book on sound
- 1 Fortas science Activities on Sound
- 3 coat hangers and string
- 5 plastic containers and elastic bands
- 1 tin box with cling film using salt to show sound vibrations

Heat

- 1 wall thermometer
- 10 forehead thermometers
- QCA lesson plans " Keeping warm"

Materials:

QCA lesson plans e.g. sorting and using materials, characteristics of materials, rocks and soils, solids liquids and how they can be separated, gases around us reversible and irreversible changes, more about dissolving ...and any more!

Other Resources:

Teachers of Fourth, Fifth and Sixth Classes have a copy of " Science, Technology and Gender" a set of Science lessons in each of the Strand Units published by the Curriculum Development Unit at Mary Immaculate Training College Limerick.