

# CWETNS Science Policy

## Overview of Science

### Introduction to Science Policy.

Teaching Science in CWETNS has developed as we have grown rapidly since opening in 2013. This plan was written by the staff of Canal Way Educate Together National School in 2013. The parents and Board of Management were also consulted.

### Rationale

It was decided to focus on this area for development

.To benefit teaching and learning

.To conform to principles outlined in the primary curriculum

.To facilitate the long and short term planning of individual teachers.

To scaffold links within the new school community and surrounding areas.

### Vision

Through our school's science programme, we aim to help pupils to come to an understanding of and take an interest in the world and environment around them, both physical and biological. We seek to develop a broad range of skills of enquiry and cultivation of important attitudes with the acquisition of scientific knowledge and concepts about the biological and physical aspects of the world. We encourage practical investigation which is central to science enquiry. We aim to develop a sense of respect and responsibility amongst the pupils towards their local area and enable them to be stewards of the environment.

### Aims

We endorse the aims and objectives of the Primary Curriculum for Science

- To develop knowledge and understanding of scientific and technological concepts through the exploration of human, natural and physical aspects of the environment
- To develop a scientific approach to problem-solving which emphasises understanding and constructive thinking
- To encourage the child to explore, develop and apply scientific ideas and concepts through designing and making activities
- To foster the child's natural curiosity, so encouraging independent enquiry and creative action
- To help the child to appreciate the contribution of science and technology to the social, economic, cultural and other dimensions of society
- To cultivate an appreciation and respect for the diversity of living and nonliving things, their interdependence and interactions
- To encourage the 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
- To enable the child to communicate ideas, present work and report findings using a variety of media

## **Science Programme:**

### *Strands and strand units*

Infant Classes pp.15-24.

First and second classes pp.31-41

Third and fourth classes pp.51-61

Fifth and sixth classes pp 73-83

Teachers will familiarise themselves with the strands and strand units relevant to the class they are teaching. Schemes will be organised in such a way as to ensure the balance between each of the strands outlined above. The skills and concepts outlined in the Science curriculum will be reflected in the schemes, as will the teaching methodologies.

The concepts and knowledge to be explored by the child are organised in four content strands:

- Living things
- Energy and forces
- Materials
- Environmental awareness and care.

### **Children's ideas.**

Children's ideas will be used as a starting point for all scientific activity.

Scientific learning begins from children's ideas and practical experiences. Some of the strategies we use to find out what the children know already include:

- Questioning
- Testing their predictions
- Listening
- Annotated drawings
- Teacher designed tests and tasks
- Talk and discussion

We help the children to test their ideas and predictions through investigating, and designing and making. We encourage the children to pose their own questions by arousing their curiosity and by optimizing the opportunities to interact with materials and a range of ideas from other children.

### **Practical Investigations:**

Science investigations provide children with opportunities to use and apply concepts while solving a problem that has been set for them by the teacher or posed by themselves.

Practical investigations are encouraged in all classes. Discover Primary Science Experiments are assigned to each class group (See Appendix A). Opportunities are provided for the children to play freely with the materials. A range of materials will be at the children's disposal so that they will become familiar with them. Investigations allow for differentiation to meet the needs of all the children in the school. Activities are planned that are appropriate to the child's level of ability and experience.

When planning practical investigations, we will use:

- **Open Investigations:** Pupils are given or may suggest an open question for which they have to design their own investigation
- **Closed Investigations:** Pupils will engage in activities where the end result is obvious and there are not many variables.
- **Fair Testing:** Pupils develop a sense of what should be kept the same and what should be variable to ensure that an investigation is fair.
- We will consult the Teacher Guidelines pg 54 in this regard.

### **Classroom Management:**

CWETNS is a developing school with 7 classroom teachers, 2.5 support teachers. As a result there are certain factors that must be taken into consideration in relation to multi class. Teachers make use of the teacher directed whole class work, small group work and individual work on chosen topics. Children partake in group work, grouped across the classes regardless of age, ability. Within the classes we will differentiate the work for the different ages by expecting the older children to cover more ground in depth and content and presentation. We will take account of children with different needs and the Learning Support/Resource teacher and Special Needs Assistant may support the class if the need arises. There is a set of text books for reference and should be used judiciously. At present we draw on a variety of resources to supplement the teaching of science in the classroom. All children have equal access to science materials available within the school. Science work will be displayed in classrooms and may be selected for display on notice boards throughout the school and/or the Green School notice board.

### **Key Methodologies:**

The teaching methods used in science activities will reflect the key methodologies of the Primary School Curriculum:

- Using the environment
- Active learning
- Guided and discovery learning
- Free exploration of materials
- Spiral nature of the curriculum – opportunities to return to earlier learning and to extend and enhance it
- Learning through language
- Talk and discussion
- Collaborative/cooperative learning

Pupils will be given opportunities to engage in outdoor seasonal habitat work both within the schools grounds.

Children are encouraged to test out their own ideas and learn from their peers in addition to freely exploring science equipment and materials. Teachers are aware of the spiral nature of the SESE curriculum and build on knowledge and skills as children progress throughout the school. We encourage the use and development of scientific language and vocabulary e.g. fair testing, investigative work etc.

## **Skills development**

The term 'working scientifically' outlines how pupils may engage in scientific enquiry and describes the science skills that children should develop through their scientific investigations. These skills involve the children in the following:

- Observing
- Questioning
- Predicting
- Investigating and experimenting
- Estimating and measuring
- Analysing – sorting and classifying
- Recording and communicating

The Designing and Making skills will involve pupils in exploring materials, planning designs and making models that will provide solutions to practical problems. These skills involves the children in the following:

- Exploring
- Planning
- Making
- Evaluating

## **Linkage and Integration:**

Opportunities for integration and linkage are referred to in the Curriculum at the end of each strand unit

### **Linkage:**

The strands of the Science curriculum are linked using a thematic approach.

### **Integration:**

Integration is planned and organised by individual teachers. Theme based activities are used to support integration.

Examples of Integration include:

English: Procedural writing, Oral language, comprehension strategies (making predictions, etc.)

Maths: Problem solving, graphing, area measuring

History: Local Studies

Geography: Environmental Awareness and Care, Green Schools work

Art: Construction

Music: Sound

SPHE: Myself and the Wider World

Learn Together: Within the Belief System strand it is recognized that Science can inform our teaching –for example Darwin Day and Big Bang Day. Many calendars and beliefs are based on Solar and Lunar activity and we fully appreciate the role that the cosmos plays in informing us of our beliefs in the existence and non-existence of Gods.

Learn Together also crosses over into environmental topics and ethical dilemmas.

### **Assessment DS**

Assessment in science considers the following areas:

- Understanding of knowledge
- Scientific skills
- Attitudes towards science and investigation
- Ability to work collaboratively

Assessment will be in the form of:

- Teacher observation
- Annotated drawing
- Concept mapping
- Teacher-designed tests and tasks
- Portfolios and project work
- Work samples and displays of work

Information gathered by this assessment will:

- Identify areas of difficulty in order to respond to the needs of the pupils
- Establish learning outcomes
- Assist the teachers in assessing their own practice and methodologies
- Assist the teacher with short term planning
- Will form part of the report given to parents in the end of the year reports

Children are given opportunities to assess their own and each other's work particularly during design and make. They are encouraged to orally present work and accept feedback from their peers. Teacher assessment of progress in science is ongoing during the study of the strand units. This assessment will inform teachers class planning, this in turn will inform our whole school plan. Teachers share curricular information with each other as children progress from class to class throughout the school. Information from assessment will be communicated to parents at the parent/teacher meetings, and through end of year report cards.

Much of the information obtained through the teacher's observation will not be written down at the end of each lesson, teachers will question to ascertain the pupils knowledge of the content of the lesson. Their Science copies and or workbooks will provide examples of the child's work for assessment. Assessment is ongoing. Children's practical and written work and their communications in other forms will provide opportunities for them to demonstrate their knowledge and understanding of science. Parents will be sent information of their child's progress in science through parent teacher meetings and reports.

## Using the Environment

The following areas will be used:

- Garden
- Surrounding streets
- School grounds

### Children with Different Needs:

This Science programme aims to meet the needs of all the children in the school. This will be achieved by teachers varying the pace, content and methodologies to insure learning for all pupils and will be recorded in the teacher's yearly notes.

Children with physical disabilities will be catered for with the help of Special Needs Assistants.

Children of different abilities are provided for by adopting a number of the following strategies:

- Following a whole group lesson, children may be set tasks of varying complexity.
- Teachers' Questions in oral discussion can use a range of skills from simple recall to more complex comparative and analytical skills based questions (Blooms taxonomy of questioning as a guideline).
- Opportunities will be provided for children to record and tell about their scientific findings in oral presentations, drawing and written accounts.
- Children will be provided with opportunities to work in small groups and produce work as a group.
- Children with physical needs will be facilitated to access field work through support by SNA and use of easy access facilities for example raised beds for planting. Routes will be checked in advance for accessibility. School garden will be developed with accessibility in mind.

### Equality of Participation and Access:

We view the Science programme as playing a key role in ensuring equality of opportunity for all children. All children regardless of gender, age or ability will be given equal opportunity to participate in all Science activities.

### Organisation:

Science will be timetabled within the allocated time for S.E.S.E (Junior/Senior Infants: 2hrs15min & 1<sup>st</sup>-6<sup>th</sup>: 3hrs). The way in which this is done and the extent to which discretionary time is used for this subject will be left to the discretion of individual teachers. Teachers are encouraged to integrate curricular areas as much as possible to maximise exposure to Science. Teachers are also encouraged to particularly integrate Science with the Ethic and the Environment strand from the Learn Together Curriculum.

### Safety:

Please refer to the schools Health and Safety statement and Safety in Science activities. Teachers regularly teach and comment on safe procedures in Science.

There are many safety issues to consider including:

**Plants and Animals:** Disposable gloves to be used when investigating hedgerows. Children should never handle unknown or unfamiliar plants, especially fungi. Gloves to be worn also when handling birds or animals. Hand washing should be encouraged after handling plants and animals.

**Electricity:** Children should only use low-voltage battery powered devices. Mains electricity should never be used for electricity and magnetism experiments. If mains-powered equipment is used then it should be connected and operated by the teacher only. Children should be repeatedly warned about the danger of mains electricity.

Children from Infants to 3rd class should not insert or pull out plugs.

**Equipment:** The use of glass apparatus and sharp-edged tools should be avoided except under the direct supervision of the class teacher. Use plastic where possible.

**Eyes:** Children should never use lenses, binoculars or other lens devices to look directly at the sun or other intense sources of light. This includes dark glass and plastic.

**Chemicals:** Household chemicals should be purchased to meet the requirements of the experiment and any surplus disposed of on completion of experiment. Try to avoid any chemical containing bleach.

#### **Individual Teachers' Planning and Reporting:**

Teachers will report on work completed in the Cúntas Míósúil. These will help inform teachers future planning and review of whole school plan

- Teachers will use the Whole School Plan and yearly plans to inform their classroom planning.
- Teachers will use the science curriculum strands and strand units when

#### **Staff Development:**

Teachers will be made aware of any opportunities for further professional development through participation in courses available in education centres or other venues. New Staff will be shown where resources are stored and where

#### **Parental Involvement:**

Parents and other adult members of the school community are encouraged to become involved in Science initiatives in the school –Science week for example.

Parents and others who have particular knowledge and expertise may be invited to support the class teacher in implementing the science curriculum.

#### **Community Links:**

Local specialists may be invited in to share their knowledge with the class.

#### **Implementation:**

##### **Roles and Responsibilities**

Class teachers are responsible for the implementation of the Science programme in their own class. Teachers should return equipment to the designated Science area as soon as they have finished using it.

#### **Developing a love of science**

The school takes part in initiatives such as Science Week and Engineers Week. We embrace national and global scientific events and discoveries.

**Resources and Equipment:**

Science resources and equipment will be stored in a designated area in the school and will be updated and maintained by the Science co-ordinator/team.

Ratified on \_\_\_\_\_

To be reviewed \_\_\_\_\_

Chairperson \_\_\_\_\_

Principal \_\_\_\_\_