

Scoil Mháirtín, Cill Uird

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Whole School Plan for Science

Introductory Statement.

This Plan was formulated by the Principal and teachers of Scoil Mháirtín to support the implementation of the Science curriculum in the school.

Rationale.

The rationale underpinning this science plan is:

- To benefit teaching and learning in our school
- To provide a coherent approach to the teaching of science across the whole school.
- In order to ensure that pupils are given adequate opportunities to develop skills and understanding of concepts as set forth in the primary curriculum.

Vision.

Through our Science programme, we aim to foster the children's natural curiosity, help them to develop a broad range of enquiry skills, cultivate important attitudes and acquire scientific knowledge and concepts. We aim to provide children with opportunities to work scientifically and explore and investigate the local environment.

Aims:

We endorse the aims and objectives of the Primary School 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 dimension of society.
- to cultivate an appreciation of, and respect for, the diversity of living and non-living 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.

We aim through this plan, drawn up in accordance with the science curriculum, to set out our spiral approach to the teaching and learning of science. This plan will form the basis for teachers long and short term planning. It will also inform new or temporary teachers of the approaches and methodologies used in our school.

Curriculum Planning:

Strands	Strand units
Living things	Human life Plants and animals
Energy and forces	Light Heat Magnetism and electricity Sound Forces
Materials	Properties and characteristics of materials Materials and change
Environmental awareness and care	Caring for my locality Science and the environment

Skills development
Observing Questioning Predicting Investigating and experimenting Estimating and measuring Analyzing Recording and communicating Design and making skills Planning Making Evaluating

All teachers are familiar with the strands, strand units and content objectives for their class levels. We will use a balanced mix of theme-based approach to SESE, cross-curricular work and subject-centre focus. Each year children will experience a broad range of topics from each strand.

This Science plan will be addressed under the following headings:

Children's ideas.

We will use the children's ideas as a starting point for all scientific activity. During their scientific activities children will be provided with opportunities to try out, challenge, change or replace ideas. Strategies we will use to elicit children's ideas will include:

- Talk and discussion
- Open and closed questioning
- Stimulus videos/pictures
- Concept maps/cartoons
- Brainstorming
- Free play with materials

Practical investigations.

Children will be given opportunities to engage in practical investigations in all classes. 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.
- Free exploration; Children will be given opportunities to engage in free exploration of materials.

Classroom management.

A combined approach of whole class work, small group work and individual work on chosen topics and projects will be used in each class. Children will be given opportunities to work together collaboratively, share their own ideas and communicate their findings. Children will be given opportunities to experience inter-class collaboration on certain topics and projects. We encourage both the investigative approach and the teacher-directed approach. Teacher will use their professional judgement to decide which methods and approaches are best suited to the needs of their pupils.

Approaches and Methodologies

As a whole staff we will seek to ensure that the key methodologies of the primary curriculum are used by:

- 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 learning
- Skills through content
- Investigative approach

- Teacher directed approach
- ICT
- Problem solving

Differentiation – we will seek to adapt and modify activities so that they meet the needs of all children in the class: (See Teachers Guidelines p. 35)

Linkage and integration

We encourage the linkage of strands within the science curriculum and the integration of science with other subject areas.

Teachers may choose to use a thematic approach in order to integrate aspects of the science curriculum with other subjects.

This will be linked with events such as Science week/Discover Primary Science Programme. Maths and Technology will be part of the Science programme.

Using the environment.

- Features of the local environment will be incorporated into the science programme. These include a range of habitats and features of the natural and built environment within easy reach of the school: Refer to **Appendix 1**.
- The immediate environment may be enhanced by provision of logs for insects etc. Pupils will be given opportunities to observe a variety of living things in their immediate environment.
- Children will be enabled to observe the broader global environment through I.T. and technology.
- We will seek to design a science trail around the school grounds: (draw map outlining trail e.g. Bird houses in the village, school garden, maths/ geography/history trails).
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- People/groups within the locality may act as a resource e.g. environmental officer, nature wardens, Kilworth Village Renewal Committee.) **Appendix 2**
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- The school may organise/participate in schemes to foster environmental awareness and care – Green Schools project, recycling projects, composting, and energy efficient policies.
- The school as an organisation will seek to model good environmental practices, e.g. collecting samples for nature displays, packaging/waste paper...
Appropriate use will be made of recyclable materials for science activities and for other subject areas.

Balance between knowledge and skills.

Science is not only about acquiring knowledge but working scientifically. We aim to develop the skills of the scientist in pupils as they progress through the school. Children will be given opportunities to develop the skills of a scientist through a mixture of free exploration of materials, taking part in closed and open ended investigations and design and make activities. See **Appendix 3**

Resources and equipment.

- The following teaching resources are currently available for science: **Appendix 5**
- Equipment necessary to support the different strands will be in the science press and will be updated as required.
- Teachers may acquire additional equipment/materials if they require by consultation with post holder (resources permitting).
- ICT will be integrated.
- A code of practice to ensure safe Internet usage will be formulated. (**see school policy on same**)
- Teachers will familiarise themselves with materials on websites prior to use by the children.

Assessment – Looking at children’s work.

In science we will assess the children’s knowledge and understanding and development of scientific skills and attitudes. Information from assessment will be communicated to parents in the school report at the end of the year. Children may be asked to self-assess and peer assess where appropriate.

Our assessment tools include:

- Teacher observation
- Teacher-designed tasks and tests
- Work samples
- Experiments
- Design and make products

Safety.

- Safety should permeate all aspects of the teachings of Science and children should be encouraged to observe safety procedures during all tasks
- Health and Safety procedures should be adhered to when taking children on fieldtrips.
- Teachers regularly teach about the need for safe procedures and routines. (See Teacher Guidelines: Safety in general p. 27, Outdoor exploration and investigation pp. 58–59, Light p. 86, Electricity p. 97, Magnetism p. 105, Forces p. 107, Heat p. 129)

Children with different needs.

Teachers will do their best to ensure that all children have the opportunity to experience a rounded science education. We endeavour to provide for individual difference through:

- Using a mixture of whole class teaching, focused group work or paired work grouping children across the classes.
- SNA support for particular pupils/groups of pupils may be provided where possible.
- Different ways of recording and communication findings will be encouraged
- Employing a variety of methodologies in the classroom
- Differentiation for high achievers and pupils experiencing difficulty.

Timetable.

The teaching of SESE is allocated as follows:

- Infant classrooms: 2 hours 15 mins per week

-1st to 6th : 3 hours per week

This must be divided up among the three SESE subjects hence Science will have:

-Infants classes approx.. 45 minutes a week

-1st -6th : 1 hour a week

Teachers will use discretionary curriculum time (2 hours per week) for SESE as appropriate.

The school may hold a 'Science Week' or organise science demonstrations hosted by guest speakers/different classes throughout the year.

When drafting timetables for withdrawal of pupils for supplementary teaching, teachers will include these pupils for as much of the science programme as possible.

Equality of participation and access.

Boys and girls will be given equal opportunities to participate in all activities and experience all strands.

Science will be for all children regardless of gender, age or ability.

Individual teachers' planning and reporting.

The whole school plan and the curriculum documents for science will seek to provide information and guidance to individual teachers for their long and short term planning by this plan being formulated by staff. Teachers will plan using the strand units and content objectives. See relevant books and text books. **Appendix 5**

The Cúntas míosúil will serve to review and develop the whole school plan/individual teacher's preparation for following year.

Staff development.

If there are members of staff who have particular expertise and are willing to share their expertise with colleagues this will, where possible, be facilitated.

If an individual teacher needs to be supported in developing the required knowledge and skills to facilitate pupil learning in some aspects of the science curriculum, this support be provided within the school where possible by the principal/other staff members etc.

Opportunities for peer coaching and/or team teaching in these areas will be provided if possible.

Teachers will be encouraged to attend courses relating to the teaching of science.

Encouragement to share the expertise acquired at these courses will be given at formal staff meetings and informally.

Parental involvement.

We encourage parental involvement in supporting the science curriculum through assisting children with research for science projects.

At times parents may be invited to view and celebrate their children's work in science at a science day in the school.

Parents with expertise relevant to the science curriculum may be invited to share their expertise with the children.

Community Links.

-People in the community who work in science or technology may be invited to speak to the children e.g. Aistear

- People from relevant organisations e.g. biodiversity in schools, Green schools may be invited to speak to the children.
- We aim to take part in Discover Primary Science Award each year.

Success criteria.

This plan will make a difference to the teaching and learning of science in our school.

- We know that the plan has been implemented through:
 - Teacher’s preparations based on this plan
 - Procedures in this plan being consistently followed
- The plan has achieved its aims, through these indicators:
 - Teacher/parent feedback
 - Children’s feedback
 - Inspectors’ suggestions/reports
 - Assessment
- The plan aims to enhance pupil learning by:
 - Ensuring there is a balance between the process (how the child learns) and content (what the child learns)
 - Helping the children acquire the skills and concepts needed to work as a young scientist
 - giving the children opportunities to take part in a wide variety of practical investigation
 - Providing the children with opportunities to work individually, in pairs or in groups
 - Allowing the children to revisit topics in keeping with the spiral and developmental nature of the curriculum
 - Integrating science across the curriculum from Infants to Sixth

Implementation.

Roles and Responsibilities.

The principal and class teachers are responsible for the implementation of the science curriculum and science plan in their classrooms. This plan will be evaluated at a whole school staff level on a regular basis.

Those involved in review are as follows:

- Teachers
- Pupils
- Parents
- Post holders/plan co-ordinator
- BOM/DES/Others.

Review.

Progress will be reviewed as and when necessary, based on the results of assessments across all classes and on the teachers views as to the effectiveness of the plan

Timeframe.

Date for the review of this plan. (start of school year).

Ratification and Communication

This plan was ratified by the Board of Management of Scoil Mhairtin on _____

Signed _____

(Chairperson of the Board of Management)

This plan was communicated to teachers and will be implemented in classes from September 2019

Appendix 1

The following is a list of local environmental areas of interest:

- Kilworth woods
- Moore Park
- Araglen River
- Playground
- G.A.A. grounds
- Library
- School Garden
- Old Protestant graveyard
- Heaphy Grove
- Carmel's Garden Centre

Appendix 2

	Flowers	Tree	Animal	Bird	Insect
Junior Infants	Daisy Dandelion	Horse chestnut	hedgehog	robin	ladybird
Senior Infants	Buttercup White clover	Holly	rabbit	Swan	Spider
First Class	Primrose bluebell	oak	fox	blackbird	woodlouse
Second Class	Self-heal ribwort	ash	squirrel	pigeon	bee
Third Class	Robin-run- the-hedge nettle	hawthorn	frog	swallow	snail
Fourth class	Lords and ladies vetch	elder	badger	heron	butterfly
Fifth Class	Poppy speedwell	hazel	bat	kestrel	earthworm
Sixth Class	Herb Robert	Birch	Deer(red,	Crows(rook,	wasp

	Cow parsley		sika, fallow)	jackdaws, magpie)	
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All of the above available to download from the book “Wild things at school!” by Éanna Ní Lamhna.

Appendix 3

The following is a list of projects that will be designed and made per class:

	Model
Junior Infants	Playdough boats
Senior Infants	Boats and sails
First Class	Speedboats-floating and sinking
Second Class	Cars
Third Class	vehicle
Fourth Class	Bridges
Fifth Class	Bridges
Sixth Class	lighthouses

Each class from Junior Infants to Sixth class has a STEM box of ideas which may replace the above.

Appendix 4

- Tree Day-A manual on trees for Primary schools
- Oxford book of garden flowers
- Gadget book
- Top 10 of everything
- Ireland’s mammals
- Reuseton
- Ireland’s bird life
- Learning about farming and food
- See inside science
- Start up science-materials, light and dark
- Spiders in our house
- Ireland’s marine life
- Mammals of Ireland
- Endangered species

- 100 Science lessons Year R
- 100 Science Activities Year 3 / 4
- 101 Great science experiments
- Scholastic teacher workshop – Windowsill science
- Starting ecology-wood, wasteland

Appendix 5

Lists of the children's text books and the teacher's resource books.

<i>Class</i>	<ul style="list-style-type: none"> a. <i>The science book the children are using</i> b. <i>The science resource books in your classroom</i>
Junior Infants	<ul style="list-style-type: none"> a. Folens Explorers SESE b. Switch on science, Window on the world, Primary science, All around me, Earthlink
Senior Infants	<ul style="list-style-type: none"> a. Folens Explorers SESE b. Earthlink, What a wonderful world, Discover our World, Look around, Switch on Science
First Class	<ul style="list-style-type: none"> a. Small World b. Switch on science, Primary science, No fuss science
Second Class	<ul style="list-style-type: none"> a. Small World b. Earthlink, Science Quest 2, Window on the world
Third Class	<ul style="list-style-type: none"> a. Small World-Geography and Science b. Earthlink, Window on the World science, Quest 3
Fourth Class	<ul style="list-style-type: none"> a. Small World-Geography and Science b. Switch on science, What a wonderful world, Science Quest
Fifth Class	<ul style="list-style-type: none"> a. Small World-Geography and Science b. Switch on science, Science Quest, Look around, What a wonderful world

Sixth Class

- a. Small World-Geography and Science
- b. Four corners, 100 science lessons, Simply science, Electricity for life, Planet Aqua, What a wonderful world ,Unlocking Science with Sciencefusion