School Plan for Science
Whole School Plan for Science

Contents

Introductory Statement and Rationale

Vision and Aims

Content of the Plan

1. Cycles of Programme
2. Strands and Strand Units
3. Approaches and Methodologies
4. Linkage and Integration
5. Balance between Knowledge and Skills
6. Assessment and Record Keeping
7. Children with Different Needs
8. Equality of Participation and Access
9. Timetable
10. Resources and Equipment
11. Safety
12. Homework
13. Individual Teachers’ Planning and Reporting
14. Staff Development
15. Parental Involvement
16. Community Links

Success Criteria

Implementation

Review

Ratification and Communication
Title
Science School Plan

Introductory Statement and Rationale

a) Introductory Statement
Our policy on Science was revised in June 2014 by the Science Co-ordinator with input from teaching staff. The Science Policy was amended and the following plan was drawn up.

b) Rationale
We recognise Science as an integral element of Social, Environmental and Scientific education. In our school SESE provides opportunities for the child to explore, investigate and develop an understanding of the natural, human, social and cultural dimensions of local and wider environments, to learn and practise a wide range of skills and to acquire open, critical and responsible attitudes. SESE enables the child to live as an informed and caring member of local and wider communities.

We recognise the distinct role Science has to play in helping children come to terms with the biological and physical world.

This policy guides and organises the teaching and learning for Science in our school. It benefits the teachers by informing classroom planning and the pupils by ensuring Science activities are balanced and well-planned. The teaching staff drafted this policy in compliance with the requirements of the Revised Primary School Curriculum (1999).

Vision and Aims

a) Vision
Science in our school should help children to work scientifically and to develop a broad range of skills of enquiry, to cultivate important attitudes and to acquire scientific knowledge and concepts about the biological and physical aspects of the world. It is our aspiration that Science in our school will be a practical subject as much as possible with hands-on activities that give an opportunity to develop scientific skills. Environmental activities encouraged in our school will foster a positive attitude and a sense of responsibility among our pupils for the natural environment and its relationship with the human environment.
b) Aims
We endorse the aims of the Primary Curriculum:

- to enable the child to acquire knowledge, skills and attitudes so as to develop an informed and critical understanding of social, environmental and scientific issues
- to develop a scientific approach to problem solving which emphasises understanding and cognitive thinking
- to encourage the child to explore, develop and apply scientific ideas and concepts through design and making activities
- to foster the child’s natural curiosity, so encouraging independent enquiry
- 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 non-living things and their interdependence and interaction
- 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 promoting sustainable development
- to enable the child to communicate ideas, present work and report findings using a variety of media.

Content of Plan

1) Cycles of programme
The Science programme is carried out in two year cycles as follows:
- Year 2: 2015-2016
- Year 1: 2016-2017
- Year 2: 2017-2018
- Year 1: 2018-2019
- Year 2: 2019-2020

2) Stands and Strand Units

Year 1

<table>
<thead>
<tr>
<th>Strand:</th>
<th>Strand Unit:</th>
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</thead>
<tbody>
<tr>
<td>Living Things</td>
<td>Myself</td>
</tr>
<tr>
<td>Energy and Forces</td>
<td>Forces</td>
</tr>
<tr>
<td>Materials</td>
<td>Properties and Characteristics of materials</td>
</tr>
<tr>
<td>Environmental Awareness and Care</td>
<td>Caring for my Locality</td>
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</tbody>
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### Year 2

<table>
<thead>
<tr>
<th>Strand:</th>
<th>Strand Unit:</th>
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</thead>
<tbody>
<tr>
<td>Living Things</td>
<td>Plants and Animals</td>
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<tr>
<td>Energy and Forces</td>
<td>Light</td>
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<td></td>
<td>Heat</td>
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<td></td>
<td>Magnetism and Electricity</td>
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<tr>
<td>Materials:</td>
<td>Materials and Change</td>
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<td>Environmental Awareness and Care</td>
<td>Caring for my Locality</td>
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</tbody>
</table>

Teachers are very familiar with the strands, strand units, content and objectives of the Science programme for the class levels and this is maintained if the teachers change classes within the school. This familiarity and teachers own planning ensures appropriate development from class to class. Work from each strand unit has been included and spread over a two year period. This ensures in multi-class situation in the school that no overlapping or duplication occurs in any strand and that there are no gaps in the child’s scientific knowledge. Teacher will ensure that the topics are relevant and related to the child’s own experiences.

#### 3) Approaches and Methodologies

We use the children’s ideas and knowledge for all scientific lessons. We use some of the following strategies to find out these ideas including:

- Talk and discussion
- Questioning
- Listening
- Problem solving tasks
- Teacher designed tasks and tests

The children’s ideas and concepts will be modified as they work in more demanding concepts and develop open-ended investigative approaches to solving problems.

#### Practical Investigations:

The teachers provide opportunities for pupils to undertake closed investigations, open ended investigations and practical investigations in the classroom. Children have an opportunity to work together, share ideas and communicate their findings. Practical work is based on everyday situations. Pupils will be encouraged to develop a sense of what should be kept the same and what should be the variable to ensure that an investigation is fair. It is important that the children realise that they must change or vary only one condition or variable at a time to ensure fair testing. We will promote the
development of good questioning in our classrooms, with pupils as well as teachers being given the opportunity to pose their own questions and set up investigations to find answers.

Pupils will carry out closed investigations in which they will investigate activities where the end result is obvious and there are not too many variables.

In carrying out open-ended investigations children are involved in exploration (involving observing, asking questions & hypothesising), investigation (involving planning and carrying out investigations), implementation and conclusion.

**Classroom management**

Our teachers employ a variety of methods for organising the learning and teaching of Science, but individual teachers will use their professional judgement to decide which methods and approaches are best suited to the needs of their pupils. A combined approach of whole classroom work, small group work, paired work and individual work on chosen topics and projects will be used in each class. Children will be given opportunities to work together collaboratively and share their own ideas. Certain aspects of the Science Curriculum may not lend themselves to investigate work by pupils, in these instances a demonstration by the teacher will be appropriate. All children will have access to appropriate materials under the guidance of the teacher.

**Key Methodologies:**

We use a combination of approaches to meet the needs of all pupils and to suit the objectives of the strand units. These methods and approaches include:

- Using the environment
- Active learning
- Guided and discovery learning
- Problem-solving activities
- Free exploration of materials
- Spiral nature of the curriculum
- Learning through language

**4) Linkage and Integration**

Opportunities are provided at each class level to link activities to other areas of the Science Curriculum and other areas of the Curriculum. Conscious efforts are made to utilise Science lessons as opportunities to develop children’s language, competence and confidence and to teach the new vocabulary needed for Science related activities. Examples of integration include:

- Environmental awareness and care is closely integrated with the SPHE and Geography Curriculum.
- Design and Make activities is integrated with Visual Arts activities.
- Linkage with the Maths Curriculum- measuring, recording data, plotting results etc.
5) Use of the Environment

An environmental audit has been undertaken and these features of the natural and built environment will be used as a resource for lessons within the Science programme. (See Appendix 1 for Environmental Audit) Pupils are given opportunities to observe a variety of living things in their immediate environment. Our habitats include- hedgerow, deciduous trees, evergreen trees, school garden, vegetable garden, bug hotel, grass, and wall. Habitat studies in our school will take into account the following:

- Seasonal study of individual habitats
- Outdoor investigation and exploration
- Sample collection within the school’s conservation code
- Reference will be made to the school’s safety policy.

Pupils are enabled to observe the broader global environment through educational tours, ICT, video clips, photographs, visiting Scientists, relevant exhibitions, a wide range of textbooks, documentaries and other reference materials. Teachers will follow the procedures outlined in the school plan when they wish to invite a visitor to work with pupils or to take the pupils on a trip outside the school premises.

6) Balance between Knowledge and Skills

The school provides a good balance between knowledge and skills. The skills for working scientifically include:

- Questioning
- Observing
- Predicting
- Hypothesising
- Investigation and experimenting
- Estimating and measuring
- Interpreting results
- Recording and communicating results

The knowledge, understanding and the range of scientific skills the children are encouraged to use in scientific investigations will be developed and extended at each class level, as stated in the Curriculum. (Infants pages 20-21, First & Second pages 36-38, Third & Fourth pages 55-56 and Firth & Sixth pages 78-80).

Designing and Making

Designing and making is an important aspect of scientific activity. It is the process involving pupils using and applying their scientific skills and knowledge to practical tasks. (for example making lighthouses, quiz games, magnetic fishing games). The skills that pupils might apply in the process of solving practical problems are exploring, planning, making and evaluating.
7) Assessment and Record Keeping

Assessing children’s work will be carried out while the pupils are undertaking activities/investigations, engaging in discussions and planning experiments through teacher observation. We assess the children’s knowledge, skills and attitudes. Teacher observation is complemented by the use of teacher designed tasks and tests, work samples and concept mapping. Teachers assess progress in Science on an on-going basis and report to parents at the parent teacher meeting and in the end of year school report. Assessment and recording is achieved by maintaining samples of the children’s work in Science copybooks, workbooks, worksheets and projects. There will be opportunities of the pupils to engage in self-assessment as they analyse the success of design and making activities.

8) Children with Different Needs

Children in each class will show a wide range of ability, attainment and learning styles. Teachers will adapt and modify activities to include children with general and specific learning disabilities making Science accessible to all pupils. The teacher will also modify the programme to challenge children of exceptional ability. This may be achieved through a variety of the following approaches:

- Recording and assessing pupils ability
- Differentiated activities according to ability
- ICT or digital images to record work
- Hands on practical work to suit all abilities
- Assistance from Resource teacher, Learning Support teacher of Special Needs Assistant will be availed of when appropriate

9) Equality of Participation and Access

The school makes every effort to ensure equality of participation and access for all children.

10) Timetable

Science is timetabled for 45 minutes per week in the Junior classes and 1 hour per week in the Senior classes. When appropriate Science will be taught in a time block and teachers may use discretionary time as and when needed.
11) Resource and Equipment

We have identified the resources already available in the school and undertake to purchase or collect other resources as and when needed. The equipment will be stored in a central Science storage area. (See Appendix 2 for List of Resources)

12) Safety

We have addressed areas of Science that require particular safety consideration in our school Safety Statement.

13) Homework

Homework will include some of the following: written work, observation, investigation and exploration.

14) Individual Teachers’ Planning and Reporting

Teachers’ planning is guided by the curriculum, the school plan and by the abilities and needs of the pupils. Yearly and short-term plans set out a plan of work and the Cúntas Míosul specifics work completed.

15) Staff Development

Teachers are made aware of opportunities to attend Science courses and training.

16) Parental Involvement

Parents are encouraged to support the school’s Science programme.

17) Community Links

Members of the local community, local agencies or national agencies may be invited to assist the school’s Science programme by working with classes or addressing pupils. Proposed invitations must be discussed in advance with the principal. Procedures for guest speakers must be followed.
### Success Criteria

We will measure the success of our plan by monitoring the following:

- Evidence of scientific skills and knowledge development in pupils throughout the school
- Increased interest in Science and the environment throughout the school
- Evidence of practical activities in the classes
- Class and school displays
- Evidence of classes engaging in outdoor habitat work
- Formal and informal assessment
- Positive feedback from parents and pupils

| Implementation
| a) Roles and Responsibilities |
|-------------------------------|--------------------------------|
| All teachers are responsible for the implementation of the Science programme in their class and the care and maintenance of equipment. We will order addition equipment as and when the need arises. |

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<th>b) Time-frame</th>
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<td>Two-year cycle</td>
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### Review

This policy will be reviewed as the need arises. A copy of this policy will be given to each teacher.

### Ratification

This Science Policy was ratified by the Board of Management.

Signed: __________________________ Date: ________________________