

Science.

1. Introductory Statement.

This Plan was formulated by the teaching staff after due reference and discussion of relevant documentations and attendance at relevant in-service training and connected courses.

2. Rationale.

The rationale under pinning this science plan are:

- 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 envisaged in the primary curriculum.

3. Vision. (c.f. Teacher Guidelines P. 26)

'We seek to foster the children's natural curiosity by enabling them to take an active part in their own learning etc?

4. Aims: (c.f. Science Curriculum P.11)

We endorse the aims and objectives of the primary curriculum for science in order to:

- 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.

5. We aim through this plan, drawn up in accordance with the science curriculum, to set out our 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.

6. This Science plan will be addressed under the following headings:

- a) Science programme
 - 1.1 Children's ideas
 - 1.2 Practical investigations
 - 1.3 Classroom management
 - 1.4 Key methodologies
 - 1.5 Linkage and integration
 - 1.6 Using the environment
 - 1.7 Strands and strand units
 - 1.8 Balance between knowledge and skills
- b) Resources and equipment
- c) Assessment – Looking at children's work
- d) Safety
- e) Children with different needs
- f) Timetable
- g) Homework
- h) Equality of participation and access
- i) Individual teachers' planning and reporting
- j) Staff development
- k) Parental involvement
- l) Community links

6.1 Children's ideas.

- We use the children's ideas as a starting point for all scientific activity (See Teachers Guidelines p. 3)
- We find out what children know already.
- The following are some of the strategies used to find out these ideas, eg. play scenarios; talk and discussion; questioning; listening; problem-solving tasks; annotated drawings; teacher designed tests and tasks; concept mapping....
- The following strategies are used to encourage children to pose their own questions: (list)

6.2 Practical investigations.

- Practical investigations encouraged in all classes by: (list)
- Investigation will allow for differentiation to meet the needs of all the children in the school using some of the following strategies: (list)
- We will seek to ensure that the children can apply scientific concepts to everyday situations by: (list)
- We use a combination of closed activities as well as open investigation: (Teacher Guidelines p. 54)
- Teachers will seek to arrange opportunities for children to engage in free exploration of materials by: (list)

We will ensure that children at each level are aware of the concept of a fair test (See Teacher Guidelines p. 20)

6.3 Classroom management.

Use will be made of the teacher directed approach: (See Teacher Guidelines p. 54) (List)

Pupils will be enabled to work on their own problems as far as possible by: (list)

We ensure that children have an opportunity to work in different groupings, by using whole group, small groups, pair and individually.

We ensure that children have an opportunity to work collaboratively/co-operatively by: (list)

All children will have easy access to materials that may be needed, where possible.

The children will be given an opportunity to share ideas and communicate their findings by: (c.f. Teacher Guidelines p. 52).

There will be opportunities to display models/projects and present findings to others where possible.

6.4 Key methodologies

As a whole staff we will seek to ensure that the key methodologies of the primary curriculum are used by: (See Teacher Guidelines pp. 52 – 145) (list methodologies).

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.

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) (list)

6.5 Linkage and integration

At each class level, opportunities will be there to link activities/concepts to other areas of the science curriculum(see teachers Guidelines p. 34) (list)

There will be opportunities to integrate activities/concepts with other subjects/curriculum areas, e.g. each teacher/teacher at each class level identify a set of cross-curricular themes that will enable them to integrate aspects of science with other subject areas – Could this be linked with events such as Science week? (list).

Efforts will be made to utilise science lessons as opportunities to develop children's language competence and confidence

- Opportunities to identify and teach the new vocabulary needed by the children for science related activities will seek to be taught e.g. (list)

6.6 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 the school's environmental audit (copy of template on www.pcsp.ie). See also Teachers Guidelines for Geography pp. 74 – 80 for advice on working in the environment.
- Current/future staff members will be made aware of these: A list/map will be drawn up, distributed and kept updated:
- We use these across all four levels in working towards the content objectives of the science curriculum by: (list examples)
- 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: (list)
- Children will be enabled to observe the broader global environment by: (list)
- We will seek to design a science trail around the school grounds: (draw map outlining trail).
- People/groups within the locality may act as a resource e.g. environmental officer, nature wardens)
- Procedures will operate if a teacher wished to invite a visitor to work with pupils. (Include brief guidelines)
- The following procedures should apply if a teacher wishes to take a class/group on a trip outside of the school premises; (Include brief guidelines)
- The school may organise/participate in schemes to foster environmental awareness and care – Green Schools project, recycling projects, composting, energy efficient policies.
- Parents, members of the wider community may become involved.
- 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: (list)

6.7 Strands and strand units

- Teachers are familiarising themselves with the strands/strand units/content objectives for their class level(s): (refer to curriculum documents)
- This familiarity will be maintained if teachers change class/classes or if new teachers join the staff by reference to the school plan and by regular review.
- Content objectives/strands units have been selected by/assigned to each class level in a way that will ensure appropriate development from class to class: See a sample programme of work (Teacher Guidelines p. 34). A blank copy of the framework is available on the PCSP website. Could this be developed to cover all classes and record in this plan?
- Work from each strand been included for each year.

- A broad range of topics from each of the strands in the curriculum been included
- The whole school may adopt a thematic approach at certain stages of the year into the future.
- Teachers will seek to ensure that children's learning relates to every day experience e.g. germination.
- The teaching of certain aspects of the science programme in relation to human growth, development and reproduction will be in line with the school's plan for the RSE elements of SPHE.

6.8 Balance between knowledge and skills.

- (Curriculum Statement pp. 20 – 21 for Infants; pp. 36 – 38 for 1st/2nd; pp. 55 – 56 for 3rd/4th; pp. 78 – 80 for 5th/6th). Give examples of what these skills mean at different class levels. Curriculum statement etc.
- Questioning
- Observing
- Predicting
- Investigating and experimenting
- Estimating and measuring
- Analysing
- Recording and communication.
- Skills will be actively developed through the content.
- The following strategies will be used by teachers to ensure that pupils have opportunities to use and apply the science skills they are developing: (list)
- Opportunities will be there for structured and unstructured play/exploration.
- Opportunities for pupils to design and make models of their own choice will be given
- Teachers will seek to ensure that children work through all the skills involved in designing and making:
 - Exploring
 - Planning
 - Making Identify how this is done
 - Evaluating

7. Resources and equipment.

- An inventory of equipment and materials will be available in the school. Each teacher will have a copy of this inventory.
- The following teaching resources are available at the moment that may be useful: (list)
- The following books, CDs, DVDs, videos we have which will support the science curriculum: (list)
- The following equipment/resources need to be acquired: (list)
- A post holder will supply/maintain/replenish the stock of materials. An up to date list will be provided for each classroom.

- Equipment necessary to support the different strands will be provided at a central store (old school office).
- Teachers may acquire additional equipment/materials if they require by consultation with post holder (resources permitting).
- ICT will be integrated (See Teacher Guidelines pp. 140 – 141)
- A code of practice to ensure safe Internet usage will be formulated.
- Teachers will familiarise themselves with materials on websites prior to use by the children.

8. Assessment – Looking at children’s work.

Refer to school’s policy on Assessment and record keeping (See Teacher Guidelines pp. 142 – 145; Curriculum Statement pp. 142 – 145).

- Children will be given opportunities to record their work in a variety of different ways, e.g. concrete materials, oral presentation, drawing, photographs, written records, video, concept maps ... etc.
- Records of the children’s work will be kept (How?)
- Portfolios of science work may be kept
- The following may be assessed, knowledge/skills development/attitudes.
- Children will have opportunities to assess their own work. (list ways)
- The following system is in place for the recording and communication of assessment results. (list)
- Teachers will assess progress in science – on both on going basis and at the end of the year.
- Information from assessment will inform class teaching and whole school approaches by using the following methods: (list)
- Teachers report on assessment to parents by

9. Safety.

- The school’s safety statement will seek to deal adequately with science activities, e.g. storage and handling of equipment and materials, working outside of the classroom/school etc.
- Safety in general – See Teacher Guidelines p. 27
- Outdoor exploration and investigation – See Teacher Guidelines pp. 58–59
- Light – See Teacher Guidelines p. 86
- Electricity – See Teacher Guidelines p. 97
- Magnetism – See Teacher Guidelines p. 105
- Forces – See Teacher Guidelines p. 107
- Heat - See Teacher Guidelines p.129

10. Children with different needs.

- Teachers will adapt and modify activities so that all children can participate e.g.

We will seek to cater for the range of learning abilities in our science teaching, for example, children with general and specific learning disabilities, children receiving learning-support, children whose first language is neither Irish nor English, children who are exceptionally able by: (list)

Special needs assistant (SNA) will have a wider role/responsibility during science activities, e.g. overseeing safety of groups of pupils. (list ways)

The school will provide challenges for children of exceptional ability by (where feasible):

Differentiated programme within the classroom and/or homework

Use of ICT

Independent research projects

Working with parents/older pupils

Consulting organisations such as An Óige Thréitheach, Centre for Talented Youth

Other measures as appropriate for your school.

11. Timetable.

Science will be an integral part of the SESE time allocation. (See Primary School Curriculum Introduction p. 70). Proportion of time will be allocated at each level for science. This will vary depending on seasons/weather.

A central timetable used to organise the sharing of equipment/materials. A copy will be provided

The school may hold a 'Science Week' or organise science demonstrations hosted by 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.

12. Homework.

(Refer to school's Homework Policy).

Science homework will be at the teacher's discretion

Science homework will reflect the active learning approach as described in the curriculum.

There will be a balance between observation/discussion/investigation/recording/learning ...

Safety will be an issue when selecting homework assignments.

Special consideration will be given to some pupils (e.g. Special needs)

13. Equality of participation and access.

(Refer to school's Equality Policy)

Opportunities within the science programme will be used to broaden the pupils' understanding of other cultures and environments e.g. fabrics used in warmer climates, colours of clothing, materials used for building homes.

- If a parent has concerns about certain aspects of the science programme in relation to human growth, development and reproduction the matter will be referred to the principal.
- All children will have access to services, facilities, amenities in the school environment.
- Provision will be provided, where possible, and as and where necessary, for the following:
 - Members of the Traveller community
 - Children experiencing any form of disadvantage
 - Children with disabilities
 - Families with literacy problems
 - Families for whom English is not the first language

14. 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.
- The Cuntas míosúil will serve to review and develop the whole school plan/individual teachers preparation for following year.

15. 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.

16. Parental involvement.

Refer to Science Curriculum and Primary School Curriculum, Your child's learning, Guidelines for Parents.

- Parents are made aware of the nature and purpose of the science curriculum by referring them to the child's text/homework.
- Parents may be involved in supporting the science play by offering their expertise/time/finance.
- Parents may be invited to displays 'science work'.

17. Community Links.

- Members of the community may be involved in supporting the science programme by: (list)
- Local craftspeople, designers or others who could work with the children will be invited to do so.
- E-mail may be used to contact other schools or community groups. (e.g. Garden Clubs).

18. Success criteria.

- The plan will be implemented by:
 - Teacher' preparation based on this plan
 - Procedures outlined in this plan consistently followed
 - Other (list)
- Means of assessing the outcomes of the plan include:
 - Teacher/parent/pupil/community feedback
 - Inspectors' suggestions/report
 - Second level feedback.

19. Implementation.

- Roles and Responsibilities.

A science co-ordinator may co-ordinate the progress of the plan, encourage and accept feedback on its implementation, and report to staff on findings. The plan will be monitored and evaluated by staff.

20. Review.

(a) Roles and Responsibilities

Those involved in review are as follows:

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

(b) Timeframe.

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

Ratification and Communication

Ratification by Board of Management. This plan will be communicated to parents/BOM/DES by co-ordinator/principal.