



Science School Plan

INTRODUCTION

We, at St. Nicholas' Monastery, have written this Science plan in order to inform teachers, parents, B.O.M. and other relevant parties of the process and approaches adopted in this school with regard to the teaching and learning of Science. It has been ratified by the B.O.M and will be reviewed annually by means of a staff meeting or dedicated Croke Park hour allocations. Any amendments will be made accordingly.

VISION STATEMENT

The study of Science in our school is concerned with the development of knowledge and understanding of the biological and physical aspects of the world. We aspire to help pupils reflect critically to make sense of their experiences. We promote learning activities that foster the pupil's curiosity and enjoyment so that they will develop a lasting interest in Science. Practical activities, focussing on the scientific process are included as an important part of Science lessons.

AIMS

We endorse the aims of the Science Curriculum as stated in the Curricular Documents, pages 11.

- 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 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

CURRICULUM CONTENT

Skills, Concepts, Strands and Strand units

Science enables children to develop basic scientific ideas and understanding about the biological and physical aspects of the world. The Science Curriculum gives special attention to the process through which children develop this knowledge and understanding by helping them to develop scientific skills. The curriculum also helps children to develop positive attitudes to Science. It encourages them to examine and to appreciate how Science and technology impact on their lives and on the environment.

Science is for all children in the primary school from junior infants to sixth class. The curriculum is presented in two sections: a skills section and a content section.

Skills

The Science Curriculum supports children in working scientifically and in developing their designing and making skills.

- ***Working scientifically*** – Children learning by investigating is at the heart of the Science Curriculum. Children are encouraged to work as scientists as they investigate and explore their physical and natural surroundings. These first-hand experiences help them to find answers to problems themselves by exploring their own environment. The curriculum supports children in developing skills of enquiry during this investigative work: observing, asking questions, suggesting explanations, predicting outcomes, planning investigations or experiments to test ideas and drawing conclusions.
- ***Designing and making*** - Designing and making is the technological component of the Science Curriculum. This aspect of the curriculum provides children with opportunities to apply scientific ideas to everyday situations and problems. The children are challenged to explore, plan and make models and functional objects in order to solve practical problems. Designing and making simple magnetic games, wind/water mills, floating vessels, telescopes, containers for specific purposes, electrical circuits and so on develop children's awareness of the value of technology in their lives.

Content

The Science Curriculum includes four strands:

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

Each strand is subdivided into strand units which focus on particular concepts.

We have chosen in St. Nicholas' Monastery to plan using the strands and strand units. As we are a 9 mainstream teacher school we strive to ensure that there is a wide variety of topics are taught and that no class will repeat the same unit of study. Extension of a topic will be accepted providing the children are exposed to new information. The Cuntas Miosúil will reflect the topics which a class has learned in any one year.

Junior/Senior Infants

Skills development	
Working scientifically	<ul style="list-style-type: none"> • Questioning • Observing • Predicting • Investigating and experimenting • Estimating and measuring • Analysing • <i>Sorting and classifying</i> • Recording and communicating
Designing and making	<ul style="list-style-type: none"> • Exploring • Planning • Making • Evaluating
<i>The Science skills above will be developed as work is completed on the strands and strand units of the curriculum outlined below.</i>	
Strands	Strand units
Living things	<ul style="list-style-type: none"> • Myself • Plants and animals
Energy and forces	<ul style="list-style-type: none"> • Light • Sound • Heat • Magnetism and electricity

	<ul style="list-style-type: none"> • Forces
Materials	<ul style="list-style-type: none"> • Properties and characteristics of materials • Materials and change
Environmental awareness and care	<ul style="list-style-type: none"> • Caring for my locality

First & Second Class

<i>Skills development</i>	
Working scientifically	<ul style="list-style-type: none"> • Questioning • Observing • Predicting • Investigating and experimenting • Estimating and measuring • Analysing • <i>Sorting and classifying</i> • <i>Recognising patterns</i> • <i>Interpreting</i> • Recording and communicating
Designing and making	<ul style="list-style-type: none"> • Exploring • Planning • Making • Evaluating
<p><i>The Science skills above will be developed as work is completed on the strands and strand units of the curriculum outlined below.</i></p>	
<i>Strands</i>	<i>Strand units</i>
Living things	<ul style="list-style-type: none"> • Myself • Plants and animals
Energy and forces	<ul style="list-style-type: none"> • Light • Sound • Heat • Magnetism and electricity • Forces
Materials	<ul style="list-style-type: none"> • Properties and characteristics of materials

	<ul style="list-style-type: none"> • Materials and change
Environmental awareness and care	<ul style="list-style-type: none"> • Caring for my locality

Third & Fourth Class

<i>Skills development</i>	
Working scientifically	<ul style="list-style-type: none"> • Questioning • Observing • Predicting • Investigating and experimenting • Estimating and measuring • Analysing <i>Sorting and classifying</i> <i>Recognising patterns</i> <i>Interpreting</i> • Recording and communicating
Designing and making	<ul style="list-style-type: none"> • Exploring • Planning • Making • Evaluating
<i>The Science skills above will be developed as work is completed on the strands and strand units of the curriculum outlined below.</i>	
<i>Strands</i>	<i>Strand units</i>
Living things	<ul style="list-style-type: none"> • Human life • Plants and animals
Energy and forces	<ul style="list-style-type: none"> • Light • Sound • Heat • Magnetism and electricity • Forces
Materials	<ul style="list-style-type: none"> • Properties and characteristics of materials • Materials and change
Environmental awareness	<ul style="list-style-type: none"> • Environmental awareness and care

and care	<ul style="list-style-type: none"> • Science and the environment • Caring for the environment
----------	---

Fifth & Sixth Class

<i>Skills development</i>	
Working scientifically	<ul style="list-style-type: none"> • Questioning • Observing • Predicting • Investigating and experimenting • Estimating and measuring • Analysing • Sorting and classifying • Recognising patterns • Interpreting • Recording and communicating
Designing and making	<ul style="list-style-type: none"> • Exploring • Planning • Making • Evaluating
<i>The Science skills above will be developed as work is completed on the strands and strand units of the curriculum outlined below.</i>	
<i>Strands</i>	<i>Strands</i>
Living things	<ul style="list-style-type: none"> • Human life • Plant and animal life
Energy and forces	<ul style="list-style-type: none"> • Light • Sound • Heat • Magnetism and electricity • Forces
Materials	<ul style="list-style-type: none"> • Properties and characteristics of materials • Materials and change
Environmental awareness and care	<ul style="list-style-type: none"> • Environmental awareness • Science and the environment • Caring for the environment

Approaches and Methodologies

The use of a variety of approaches and methods will facilitate the efficient implementation of the Science curriculum. The nature of the strands and strand units themselves necessitates the use of a variety of teaching methods. The methods chosen should facilitate the achievement of the objectives of the unit of work as well as taking cognisance of the content and context of the lessons. The effective teacher will use a combination of approaches to meet the needs of the pupils and to suit the objectives of the unit of work. The approaches chosen by the teacher should enable the children to work scientifically in a variety of contexts, to undertake practical activities and to tackle open-ended problems and investigations.

The methodologies and approaches chosen by the teacher should accommodate the different learning styles of the children and should:

- allow the children the excitement of finding out for themselves
- enable the pupils to work on their own problems as far as possible
- encourage children to pose their own questions
- use children's ideas as a basis for activities. Children should be encouraged to use their own ideas, test and perhaps change their ideas.

Suitable and appropriate approaches and methodologies are as follows:

- Whole-class work
- Small groups
- Individual work on chosen topics or projects
- Investigative approach
- Direct Teaching
- Closed activities
- Open investigations

Teachers are recommended to refer to curriculum guidelines for further clarification on approaches and methodologies.

Assessment

Assessing children's work will be carried out while the pupils are undertaking investigations and are dependent on observation by the teacher of children as they undertake investigative work.

The curriculum makes it clear that in infant classes and in first and second classes much of the work suggested might be delivered through integrated themes and topics, and assessment should be sufficiently flexible to accommodate this pedagogical approach. Assessment techniques will also have to take cognisance of the wide range of units from which the content of the programme may be selected in the middle and senior classes and the

criteria which should inform the planning of a broad and balanced Science curriculum.

The following are forms of assessment among those which teachers will find most useful:

- ❖ Teacher Observation
- ❖ Teacher designed tasks
- ❖ Projects
- ❖ Pupil Portfolios
- ❖ Self Assessment
- ❖ Conferencing

Observations and assessment results will be kept on file to inform the Parents of their children's progress which will be discussed at Parent Teacher meeting and other opportunities throughout the year.

Children with differing needs

This Science plan 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. This will be recorded in the teacher's yearly notes. The requirements of children with special needs will be taken into account when planning class lessons and related activities. The S.N.A. supports particular children and groups as directed by the class teacher

Equality of participation and access

At no point will any child be denied or deprived of any teaching or learning because of gender, age, religion or ability. All children will have the same access to education as other children.

Timetable

All classes will have a minimum of one hour per week of Science. This time allocation may be broken down at the discretion of the individual teacher. We recognise that in the junior classes, the time allotted will be of shorter duration on a more frequent basis, while senior classes may divide the hour into longer time spans, such as two thirty-minute sessions, or three twenty-minute sessions. Timetables will all record the time allocation for Science. There are two hours of discretionary time available each week which teachers can occasionally use to support the Science curriculum.

Linkage and Integration

We recognise the inter-related nature of the Science curriculum, and acknowledge that while children are engaged in any one particular strand there will be overlapping with the other strands.

Science provides many opportunities for integration, and teachers will plan for the integration as appropriate. We recognise that there will be many opportunities to integrate with Literacy, Science, Music, Geography, Drama, Language and Visual Arts

Homework

The giving of Science homework will be at the discretion of the class teacher. The objective of homework will be to consolidate all previous learning which will have taken place.

Resources

There is a certain amount of resources available to each teacher to cover each of the strands. These are stored in a press and must be returned to their place once the unit of work is finished. Individual teachers also have their own resources. It is intended to develop our resources for Science. . The use of ICT is important in the teaching of Science. The use of the internet to research topics is valuable. Teachers have access to You Tube on their lap tops which they can, using an overhead projector, transmit to the whiteboard. The use of visualisers and digital cameras allow for a greater scope for ICT in Science.

Individual Teacher Planning

Each class teacher is responsible for their Science planning. All teachers will plan on a termly and fortnightly basis. All subject concepts, skills and content taught must be recorded in teacher planning. A Cuntas Míósúil must be completed at the end of each month where subject skills and objectives achieved are recorded. A copy of the Cuntas Míósúil must be submitted to the Principal

Staff Development

All staff members have attended the Curriculum In-service Training days. In addition help can be sought by the staff from the PDST to assist in our development. Teachers also have access to the courses that are run by the local education centre.

Parental Involvement

Overall parental involvement is encouraged. We believe that children should share with their parents all the new information they have learned on a topic.

Success Criteria

- The success of this plan will be measured using the following criteria:
- Implementation of the Science curriculum will be evident in the teacher work

- Continuity of content and methodology will be evident in teachers preparation

Ongoing assessment will show that pupils are acquiring concepts thought and an ability to engage with others in a manner appropriate to their age and personality

Ratification

This plan has been ratified by the B.O.M. and will be reviewed annually.

Signed: _____

Date: _____