

Newport Convent Primary School



Roll number:04067F

Science Policy

Newport Convent Primary School Science Policy

Introductory Statement:

Rationale

The policy has been developed:

- To benefit teaching and learning in our school
- To provide a coherent approach to the teaching of science across the whole school
- To ensure that pupils are given adequate opportunities to develop skills and understanding of concepts as envisaged in the Primary School Curriculum

Vision and Aims

Vision:

Through our Science programme, we aim to foster children's natural curiosity, help them to work scientifically to develop a broad range of enquiry skills, cultivate important attitudes and acquire scientific knowledge and concepts. We aim to ensure that pupils are given adequate opportunities to develop skills and understand concepts as envisaged in the Primary School Curriculum.

Aims:

We hope to meet the aims of the Primary School Curriculum for science through the implementation of this plan throughout the school.

- 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
- to provide opportunities for the children to observe and interact with their local environment and to observe the effects of seasonal change throughout the year in the school grounds and local areas where possible.
- To further use and develop the school garden for the benefit of all classes.

Content of Plan

Strands and Strand Units	Junior Infants	Senior Infants
Living Things		
Human Life	<ul style="list-style-type: none"> • My Body • My hand 	<ul style="list-style-type: none"> • My senses • What do you hear?
Plants and Animals	<ul style="list-style-type: none"> • The Hedgehog • A Tree in Winter • A Tree in Summer • Parts of a Plant • Parts of a Bird • Minibeast Hunt • The Life Cycle of a Butterfly 	<ul style="list-style-type: none"> • A Tree in Autumn • The Penguin • What does a Seed Need? • Grow a Butter Bean Plant • A Tree in Spring • Amazing Bees! • Minibeast Hunt • The Life Cycle of a Frog
Energy and Forces		
Light	<ul style="list-style-type: none"> • Colour Hunt 	<ul style="list-style-type: none"> • Investigate: Shadows
Sound	<ul style="list-style-type: none"> • Sound Walk 	<ul style="list-style-type: none"> • Farm Sounds Bingo • Design and Make: Maracas

Heat	<ul style="list-style-type: none"> Investigate: What is the Hottest Part of the Room? 	<ul style="list-style-type: none"> Investigate: What Will Happen When it's Heated?
Magnetism and Electricity	<ul style="list-style-type: none"> Electricity Electrical Safety 	<ul style="list-style-type: none"> Investigate: Is it Magnetic? Investigate: Which magnet is Stronger?
Forces	<ul style="list-style-type: none"> Push and Pull Investigate: Will it Roll? 	<ul style="list-style-type: none"> Investigate: Will it Float? Design and Make: A Boat
Materials		
Properties and Characteristics of Materials	<ul style="list-style-type: none"> Materials Inside Materials Outside 	<ul style="list-style-type: none"> Investigate: Materials Design and Make: A Life Jacket
Materials and Change	<ul style="list-style-type: none"> Investigate: Will it Change in Water? Design and Make: Wellies for Teddy 	<ul style="list-style-type: none"> Investigate: What Will Happen When it's Heated?
Environmental Awareness and Care		
Caring for my Locality	<ul style="list-style-type: none"> Autumn walk Winter Walk Spring Walk Summer Walk Explore: A Grass Environment Explore: The base of a tree 	<ul style="list-style-type: none"> Explore: Autumn Explore: Winter Explore: Spring Explore: Summer Explore: A Grass Environment Explore: A Soil Environment

Strands and Strand Units	First Class	Second Class
Living Things		
Human Life	<ul style="list-style-type: none"> Body parts Senses 	<ul style="list-style-type: none"> Human life processes -How the body moves -Bones

Plants and Animals	<ul style="list-style-type: none"> • Trees-types of leaves • How do animals survive during the winter? • How does a sunflower grow? • Animal habitats-Australia • Birds in Ireland • The beach • Body parts of the fish • Do plants always grow in a straight line? 	<ul style="list-style-type: none"> • Processes of life-apple seed to apple tree • What seeds need to grow • Signs of Spring, Summer, Autumn and Winter. • The life cycle of the sea turtle • What is a vertebrate?
Energy and Forces		
Light	Where does light come from?	<ul style="list-style-type: none"> • Light and heat-how to stay safe in the sun.
Sound	<ul style="list-style-type: none"> • How are sound effects made? • High/low sounds 	<ul style="list-style-type: none"> • How do I describe sounds? • Design and make musical instruments
Heat	<ul style="list-style-type: none"> • What is hotter?4 thermometer testing 	<ul style="list-style-type: none"> • How hot is the Sahara Desert?
Magnetism and Electricity	<ul style="list-style-type: none"> • Static electricity: Does the number of rubs affect the static electricity? 	<ul style="list-style-type: none"> • Where does electricity come from? • How magnets work? • Do magnets work through different materials?
Forces	<ul style="list-style-type: none"> • Slopes • Friction 	<ul style="list-style-type: none"> • How does water make a canal boat move? • Design and make a sailboat.

Materials		
Properties and Characteristics of Materials	<ul style="list-style-type: none"> • Transparent or opaque • Halloween ghosts • What is it made of? • Design and make a hat 	<ul style="list-style-type: none"> • Identify the best material for the job. • Design and make a house for a mouse.
Materials and Change	<ul style="list-style-type: none"> • Mixtures: Separate and make mixtures 	<ul style="list-style-type: none"> • Mixing colours-colour wheel • Separating colours
Environmental Awareness and Care		
Caring for my Locality	<ul style="list-style-type: none"> • How can we best care for our classroom? • A recycling system for our classroom 	<ul style="list-style-type: none"> • Where do foxes live? • Why is water so important? • Why must we care for trees?
Strands and Strand Units	Third Class	Fourth Class
Living Things		
Human Life	<ul style="list-style-type: none"> • Human Life: Exercise Your Heart • Sense of taste: Develop an 	<ul style="list-style-type: none"> • Teeth-Structure and function of our teeth • Investigate the different impact

	<p>understanding of how we taste.</p>	<p>certain liquids have on our teeth.</p> <ul style="list-style-type: none"> • Importance of looking after our teeth-Tooth Decay experiment • Healthy Diet • Variety and characteristics of living things • External and internal organs • Healthy Eating Food Pyramid • Human life processes-Movement
Plants and Animals	<ul style="list-style-type: none"> • Planting Tomatoes • Growing trees from seeds 	<ul style="list-style-type: none"> • Plants and animals from wider environments. A study of Antarctic. Adaptions to local conditions • Processes of of life: <ul style="list-style-type: none"> -The factors that affect plant growth • Variety and Characteristics-Food chains • Variety and characteristics <ul style="list-style-type: none"> -Sorting and grouping living things -Identification of common species
Energy and Forces		
Light	<ul style="list-style-type: none"> • Rainbow Spinners: Investigate the splitting and mixing of light. • Solar Energy, Solar ovens: Learn that light is a form of energy. 	<ul style="list-style-type: none"> • Summer and staying safe in the sun • Sun and heat for survival of plants and animals

<p>Sound</p>	<ul style="list-style-type: none"> • Investigating how sound travels through materials of different densities. • Increase understanding of how ways in which sound can travel (String Telephone) 	<ul style="list-style-type: none"> • Design and make a range of simple instruments using a variety of tools and materials-Making an elastic banjo • Sound energy <ul style="list-style-type: none"> -Environmental sounds -Making sounds -Sound travelling through materials
<p>Heat</p>	<ul style="list-style-type: none"> • Solar Energy - Absorbing the sun's energy in water, black and white thermometers. (Curious Minds Classroom activities) 	<ul style="list-style-type: none"> • Temperature <ul style="list-style-type: none"> -Identifying different ways homes are heated -Using thermometers -The sun -Artificial heat sources • Kitchen Chemistry Experiment-Placing baking soda into a bowl and add vinegar- Predict results • Friction-Break time

<p>Magnetism and Electricity</p>	<ul style="list-style-type: none"> • Simple electric circuits: <ul style="list-style-type: none"> -Make a torch -Make a Lighthouse -Make an Electric Quiz • Magnetism: Investigate magnetic and non-magnetic materials and the magnetic properties of iron. • Magnetic cars • Investigating static electricity (Sticky balloons, Bendy Water) • Scribble bots 	<ul style="list-style-type: none"> • Magnets • Static electricity • Electricity
<p>Forces</p>	<ul style="list-style-type: none"> • The Windbag- exploring some properties of air and to deduce that hot air has substance • Walking on Air- to build an apparatus which may be used to investigate how pressurized air will withstand force 	<ul style="list-style-type: none"> • Falling objects • Levers • Catapults for Norman castles • Moving objects • Friction
<p>Materials</p>		
<p>Properties and Characteristics of Materials</p>	<ul style="list-style-type: none"> • How the nappy works • To investigate how some solids dissolve in water. 	<ul style="list-style-type: none"> • Common materials in the environment • Raw and manufactured materials

	<ul style="list-style-type: none"> • Mixing of soap and water to make bubbles • Explore the properties of air. (The Windbag) • Investigate how pressurized air can withstand force • Investigate the comparative density of saltwater and freshwater. • Observe and investigate a range of familiar materials in the immediate environment; Investigate materials for different properties; Investigate how materials may be used in construction (Design a Bridge) 	<ul style="list-style-type: none"> • Introduction to the concepts of mixing materials to produce a useful product such as ink • Describe and compare materials noting differences in colour/shape and texture • Identify and investigate a range of common materials in the immediate environment • Some liquids do not mix-Experiment-Water food colouring- Children will pour oil into water and predict what will happen • A Salt Course-Teach children to explore evaporation of water and the separation of salt and water. • Parachutes -Gravity • Friction • Create different resources that are waterproof • Materials: colour, shape and texture. Solid, liquid or gaseous materials • Making lava lamps
Materials and Change	<ul style="list-style-type: none"> • A Water Washer-make a water filter • Demonstrate how dramatic chemical change can be-Fizzy Lizzy Blows her Top-coke and mentos experiment, Halloween 	<ul style="list-style-type: none"> • Heating and cooling • Mixing and other changes-Super fountain • Mentos and coke • Keeping water out

	<p>cauldrons (vinegar and baking soda, food colouring)</p> <ul style="list-style-type: none"> Investigate how some solids dissolve in water 	
Environmental Awareness and Care		
Environmental Awareness	<ul style="list-style-type: none"> Become aware of the importance of the Earth's renewable and non-renewable resources-Solar ovens 	<ul style="list-style-type: none"> Renewable and non-renewable resources Actions of people impacting the environment Conservation of resources
Science and the Environment	<ul style="list-style-type: none"> Sustainable energy-Solar energy Water -Cleaning dirty water and water conservation 	<ul style="list-style-type: none"> The application of science and technology The effects of human activities Examine the work of biomedical engineers and the environment-prototype of knees and hips designed by biomedical engineers
Caring for the Environment	<ul style="list-style-type: none"> Make a Bird Feeder Water -water conservation Come to appreciate the need to conserve resources. Linked to Green Schools work. 	<ul style="list-style-type: none"> Reducing waste e.g. zero waste lunches, using the classroom bins correctly Green Schools National Spring Clean Month Litter and waste

Strands and Strand Units	Fifth Class	Sixth Class
Living Things		
Human Life	<ul style="list-style-type: none"> • Sport and your body • Good health for all 	<ul style="list-style-type: none"> • All About the Body • Every Breath You Take
Plants and Animals	<ul style="list-style-type: none"> • Exploring Boglands • Investigating Soil • Seasons • It starts with a seed • Mountains of the World • Brazil-The Amazon 	<ul style="list-style-type: none"> • Wild About Animals • India • By the Sea
Energy and Forces		
Light	<ul style="list-style-type: none"> • Let There Be Light! 	<ul style="list-style-type: none"> • Here Comes the Sun
Sound	<ul style="list-style-type: none"> • The Sound of Music 	
Heat	<ul style="list-style-type: none"> • Measuring the Weather 	<ul style="list-style-type: none"> • Here Comes the Sun
Magnetism and Electricity	<ul style="list-style-type: none"> • Magnets 	Electricity-It's Shocking
Forces	<ul style="list-style-type: none"> • Wind Power 	<ul style="list-style-type: none"> • The Science of Stunts
Materials		
Properties and Characteristics of Materials	<ul style="list-style-type: none"> • Recycling and Composting 	<ul style="list-style-type: none"> • Rock On • Matter and its properties
Materials and Change		<ul style="list-style-type: none"> • Kitchen Science
Environmental Awareness and Care		
Environmental Awareness	<ul style="list-style-type: none"> • Eco-towns 	<ul style="list-style-type: none"> • Climate • Climate Breakdown

		<ul style="list-style-type: none"> • Sustainability
Science and the Environment	<ul style="list-style-type: none"> • Robotics 	<ul style="list-style-type: none"> • All About the Body
Caring for the Environment	<ul style="list-style-type: none"> • Recycling and Composting 	<ul style="list-style-type: none"> • Climate Breakdown

Children's Ideas

Children's ideas are regularly used a starting point for 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
- Brainstorming
- Concept Mapping
- KWL Chart
- Questioning (open and closed questions)
- Free play with materials
- Problem Solving Task
- Stimulus videos/cartoons/pictures

Practical Investigations

Children will be given opportunities to engage in practical investigations in all classes. In planning for these investigations, the teacher will allow for the differentiated needs of the class. In developing the scientific concepts teachers will be conscious of the need to relate these scientific concepts to the everyday experience of the children. 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

We encouraged both the investigative approach, and the teacher directed approach. The teacher directed approach is used in class when demonstrating activities that may involve potential hazards and ensuring that safety practises are being applied. However, the investigative approach is fostered in our school. Whenever feasible children are encouraged to work individually, in pairs or in small groups investigating and experimenting. Children may pursue their own investigations that allow them to pursue their own interests and ideas. Children will be given opportunities to work collaboratively, share ideas and communicate their findings. Children will be given opportunities to experience inter-class collaboration on certain topics and projects. Teachers will use their professional judgment to decide which methods and approaches are best suited to the needs of their pupils.

Key Approaches and Methodologies

The key methodologies as outlined in the Primary Curriculum are used throughout the school. We will use a combination of the following approaches:

- Talk and discussion
- Active learning
- Guided and discovery learning
- Collaborative learning
- Problem solving
- Skills development through content
- Use of the environment
- Free exploration of materials
- Investigative approach
- Teacher directed approach
- Learning through language
- ICT
- Integration

The science curriculum is spiral by nature. During their time in our school, children will have opportunities to return to earlier learning and enhance it.

We adapt and modify methodologies and activities to meet the needs and abilities of all children in the class.

Linkage and Integration

At all class levels there are opportunities to link activities across different areas of the Science curriculum. Teachers are encouraged to take a thematic approach where appropriate to SESE planning to allow integration between Science, History and Geography. There are also opportunities to integrate the teaching of Science with other Curriculum areas such as English, Maths, Art, Music etc. An emphasis is placed on the explicit teaching of new scientific vocabulary needed by the children for science related activities. A conscious effort is made to develop children's language competence and confidence by providing opportunities to prepare and deliver science presentations.

Using the Environment

We incorporate our local environment in the implementation of the science curriculum. Emphasis is placed on the natural environment, such as local town, school grounds, school garden, hedgerows and on the structural environment of the school itself. Children are encouraged to become involved in the enhancement of the immediate environment of the school grounds through active participation in maintaining it and observing its plant and animal life. We participate in the Tidy Towns initiative under the direction of the Tidy Towns coordinators for our town by cleaning our school grounds and the surrounding areas. Guest speakers are welcomed by the school to enhance and vary the learning of science in accordance with school policy. Teachers are also encouraged to take class groups on organised field trips outside of school premises as outlined in the school's guidelines, including to SFI Discover Centres as part of our Curious Minds work. We are an active participant in the Green Schools project. We incorporate our Green Schools policy into all areas of school life. The school actively participates in the recycling of paper, plastic bottles, cardboard, batteries and newspapers. The use of materials as a means of recycling in science and art/crafts activities is actively encouraged.

Balance between Knowledge and Skills

In implementation of knowledge and skills teacher attention will be drawn to the importance of developing skills in tandem with acquiring information. 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. The skills to be developed are:

Observing

At all class levels children will be asked to compare and describe similarities and differences between objects. This will lead them to observing characteristics of familiar things, such as their shape, size, colour, pattern and texture.

Questioning

Questioning is used to help the child form links between previous and new experiences.

Predicting

Pupils make predictions to forecast what might happen in certain circumstances.

Investigating and Experimenting

Pupils will identify the materials required and may suggest approaches that will help carry out the investigation. Children will be encouraged to plan and ensure the test they are conducting is fair.

Recording and communicating

Children will record and communicate their observations and the results of their practical work through a variety of media, for example drawings, collage, written and oral reports, and using information and communication technologies. Children will have opportunities to report to others during our Open Day for Curious Minds, Science Week and Engineers Week.

Analysing

Children will be encouraged to sort and classify information, recognise patterns and relationships, interpret information and offer explanations and draw conclusions from their exploration.

Children will be given an opportunity to use their science skills in structured and unstructured play/exploration and encouraged to make models. The concepts of making, planning and evaluating are at the heart of the designing and making process.

Assessment – Looking at Children’s Work

Assessment in science will assess the child’s knowledge and understanding of scientific matters, the acquisition of scientific skills and the cultivation of important attitudes. Assessment will be a continuous process and part of the normal teaching and learning situations. The children will be given opportunities to record their work in a variety of different ways which include concrete materials, oral presentations, drawings, photographs, written records, projects, video recording and concept maps. The

following assessment tools are used to assess the children's knowledge, skills development and attitudes:

- Teacher observation
- Teacher-designed tasks and tests
- Work samples, portfolios and projects
- Curriculum profiles
- Questioning
- Concept mapping
- Self-assessment

Parents are informed of their child's progress in science bi-annually, at parent/teacher meetings and through school reports and if deemed necessary at other times throughout the school year.

Children with Different Needs

We will use several techniques to provide a range of learning activities appropriate to the individual needs of pupils.

Forms of differentiation:

- Learning objectives
- Pace
- Teaching style
- Support
- Resource
- Task
- Outcome
- Grouping
- Other

Equality of Participation and Access

Our science policy is an all- inclusive policy which gives equal opportunities to all children to participate and integrate fully. In delivering the curriculum teachers are conscious of their obligations under the Equal Status Act to ensure students are not discriminated against in their work. Regarding pupils with a disability which impairs

their full participation, every effort will be made following consultation with parents to ensure inclusion and optimum participation.

Organisational Planning

Timetable

At infant level two hours and fifteen minutes per week are allocated for SESE. From first class up the allocation is three hours per week.

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

- Infant classes approx. 45 minutes per week
- 1st-6th:1 hour a week

Depending on the topic and at the teacher's discretion, time can be blocked or extended. Science can also be incorporated into Aistear in the Junior classes. Teachers may use discretionary time (1 hour per week short day/2 hours per week full day) for SESE as appropriate.

Resources, Equipment and ICT

- The school has a central storage press for shared materials. Classes can access both bought and recycled materials for designing, making, investigating and experimenting. Classes also have access to a variety of materials to aid environmental awareness e.g. bug finders, magnifying glasses etc. Teachers also store materials specific to their class in the classrooms. We have attached a list of our current resources for Science to this plan.
- Internet access is available in all classrooms and an ICT timetable is in operation to allow each class access to our current supply of tablets and laptops each week. The school has a code of practice to ensure safe Internet usage. The school encourages the use of science websites providing it is within the safe use of internet guidelines. Teachers familiarise themselves with material on websites prior to using them in the classroom. ICT can also be used to support the recording of children's responses in Science.

Safety

- Safety will permeate all aspects of the teaching of science. Throughout their science investigations children will be made aware of and encouraged to adopt safe practices. They will observe safety procedures in designing and making

tasks, particularly when they are using tools and materials. Safety is also considered with regard to the storage of all scientific materials and equipment.

- Health and Safety procedures should be adhered to when taking children on field trips.
- Teachers regularly teach about the need for safe procedures and routines. (See Teacher Guidelines: Safety in general-p.27, Outdoor exploration and investigation-p.58-59,Light-p.86,Electricity-p.97,Magnetism-p.105,Forces-p.107,Heat-p.129)

Individual Teachers' Planning and Reporting

This policy will inform individual teacher's long term and short-term planning. Teachers will create a Long-Term Science Plan at the beginning of the year based on the Science Curriculum. They will ensure that all areas of their Long-Term Plan are covered in their fortnightly plan and recorded in their Cuntas Míosúil. Teachers will plan using the strands and strand units and a thematic approach where appropriate. The Cuntas Miosúil will be used to record what has been taught and will inform our review and assessment for learning. This will contribute to our overall review of our science policy in 2027.

Staff Development

Through meeting invited guest speakers, tours, science weeks and recommended internet use, teachers' knowledge and skills of science will continue to develop. The Principal/Post holder will also notify the staff of any opportunities for further professional development through participation in courses offered by the Education Centre and/or other parties.

Parental Involvement

We encourage parental involvement in supporting the science curriculum through assisting children with research for science projects. Parents are invited to view and celebrate their children's work in science at our Open Day as part of our Curious Minds work. 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.

- 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 the Curious Minds Awards each year.
- Children may be given the opportunity to attend Science Week and Engineers Week events.
- Children may be given the opportunity to visit an SFI Discover Centre as part of our Curious Minds Award work.

Success Criteria

The following will indicate the degree of implementation and success of this plan.

- Teachers' preparation will be based on this plan
- Procedures outlined will be consistently followed
- Monthly reports will reflect this plan

The following are the indicators for the achievement of the plan's aims:

- Feedback from teachers/parents/pupils/community /guests
- Inspectors' suggestions and reports

This science plan has promoted the key considerations for implementing the science curriculum. At the end of each school year the teacher will reflect on their teaching of science in preparation for the following year.

Implementation

Roles and Responsibilities

This science policy was revised and updated in September 2024. The plan will be implemented and developed by the teachers and supported by the Board of Management. The principal and the post holder will co-ordinate and monitor the progress of the plan in classrooms by formal and informal discussions with the teachers, encourage and accept feedback on its implementation, and report to staff on findings.

Review

The Science Policy will be reviewed in September 2026 by teachers, post-holders and BOM.

Ratification and Communication

Following ratification by the Board of Management, a copy of this plan will be available to parents and guardians on the school website.

Signed by:

Patrick O'Toole

Chairperson B.O.M

Miriam Foley

Principal

Date: 9-10-2024