



Ballymore National School

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**Under the Patronage of the Church of Ireland
Bishop of Derry and Raphoe.**

Science Plan

Introductory Statement:

This Science policy was devised through the collaboration of staff from Ballymore National School. The plan was discussed and revised before being put before the Board of Management for ratification. As a whole school plan, it will inform teaching and learning of this subject and will serve as the basis for all long- and short-term planning on Science.

Rationale:

- The purpose of this science policy is to compile a user -friendly document outlining the approach, methodologies, timetable, content and resources necessary to implement the subject as per Curriculum.
- It is hoped that this plan will ensure that children will experience a broad and balanced curriculum in which undue repetition and significant gaps are avoided.
- It is intended that over a two-year period all strand units from each strand should be covered.
- There should also be a balance between the development of scientific knowledge and understanding and the processes of working scientifically.
- This policy should ensure continuity and progression in the development of

scientific ideas and in the application of investigative skills.

Vision and Aims:

Vision:

Science in the school should help children to develop a broad range of skills of enquiry, cultivate important attitudes and encourage the acquisition of scientific knowledge and concepts about the biological and physical 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, focusing on the scientific process are included as an important part of Science lessons.

Aims:

- 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
- To aid the child to appreciate the contribution of science and technology to the wider world
- To appreciate and respect diverse living and non-living things
- To encourage the child to become environmentally responsible and aware
- To enable the child to communicate ideas, present ideas and report findings using a variety of media
- 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
- Support the schools effort to gain the Green Flag Award as part of whole school action for the environment and raising pupil awareness of the importance of environmental issues.

Curriculum Planning:

The Science Curriculum comprises of two parts:

- Skills development
- Strand and strand units

Skills development:

*See Appendix 1 for complete Curriculum Content at each class level.

Skills development: Junior - Second Classes:

Working Scientifically	<ul style="list-style-type: none">• Questioning• Observing• Predicting• Investigating and experimenting• Estimating and measuring• Analysing• Sorting and classifying• Recording and communicating
Designing and Making	<ul style="list-style-type: none">• Exploring• Planning• Making• Evaluating

Skills development: Third - Sixth Classes:

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">• Questioning• Observing• Predicting• Investigating and experimenting• Estimating and measuring• Analysing

- • Sorting and classifying

The science skills above will be developed as work is completed on the strands and strand units of the curriculum outlined in Appendix 1.

Strands and Strand Units

Strand	Strand Units
Living things	Human life Plant and animal life
Energy and forces	Light Sound Heat Magnetism and electricity Forces
Materials	Properties and characteristics of materials Materials and change
Environmental awareness and care	Environmental awareness Science and the environment Caring for the environment

Science Plan Overview

	Year 1(even)	Year 2 (odd)
Living things	Plants	Animals
Materials	Materials and change	Properties and characteristics of materials
Energy and Forces	Light, sound and heat	Magnetism, electricity and forces
Environment awareness and care	Caring for your environment	Science and the environment
Living things	Myself (every year)	Myself (every year)

The words odd/even refer to the year in which the school year begins, For example, the school year begins in September 2022. The year number is even, therefore the programme followed for the whole school year until June 2023 is the even programme. The timetable will allow all classes to follow similar themes simultaneously.

Our science plan is based on a spiral approach as per the curriculum. For this reason, it is not intended that all strand units will be taught in each class. The units may be supplemented by extension work at the discretion of the class teacher.

Practical Investigations:

- These will be used as appropriate at each class level.
- The concept of a fair test is introduced from third class with the children encouraged to identify the conditions that make a difference to an experiment.

Balance between Knowledge and Skills:

- The school participates in the Science Week, Engineers and Maths Week. These programmes promote the skills of working scientifically through conducting of open ended investigations.
- They also develop the skills of designing and making in each of the strands.
- At least one open ended investigated and one designing and making activity will be conducted in each of the strands each year.

Using the environment:

- The school is committed to making use of its grounds and the habitats of the locality.
- The immediate environment will be the starting point for environmental education
- As their knowledge and understanding grow they will then learn about other environments in the Irish, European and Global context
- In keeping with our green schools' programme children will actively participate in-Litter management, recycling, waste reduction, energy awareness and water conservation

Approaches and Methodologies

To develop the children's capacity 'thinking scientifically' and to accommodate the different learning styles of the children all teachers will employ a wide range of teaching approaches and methodologies including

- 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

The approaches adopted should create a learning environment where:

- Practical activity is encouraged (Hands- on discovery)
- Links with the environment are fostered
- Children have an opportunity to work together, share ideas and communicate their findings
- Children's ideas are the starting point for science activities (Concept mapping)
- Children should be allowed the excitement of finding out for themselves
- Children are encouraged to pose their own questions
- Aistear

The nature of the strands and strand units themselves necessitates the use of a variety of teaching methods. The approaches chosen should enable the children to work scientifically in a variety of contexts, to undertake practical activities and to tackle open-ended investigations.

Different methods are outlined as follows:

Whole-class work:

This is effective in introducing a topic and concept-mapping. It is also useful in providing background information that may be required for an activity.

Small groups:

This can be in many forms:

- Several groups working on the same activity
- Small groups rotating around different activities
- Small groups working on independent activities

Individual work:

This is where children pursue their own studies and carry out investigations that allow them to pursue their own interests and ideas.

Linkage and Integration

- Opportunity for the use of an integrated approach exists in all levels in the science curriculum within the school.
- The strands and strand units of the science curriculum are not discrete – work on a topic or investigation may incorporate strands from other curriculum areas.
- Teachers will make provision for this linkage in their short-term planning.

Children with Different Needs

This Science programme 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. Evidence of this differentiated approach will be recorded in the teachers planning.
- The requirements of children with special needs will be taken into account when planning class lessons and related activities.
- The S.N.A. supports children with particular needs and groups as directed by the class teacher. (When applicable)
- Where a teacher recognises that a child displays a particular ability or interest in Science; this will be communicated to the parents so that the child is encouraged and supported at home also.
- Children of exceptional ability are encouraged to access additional information through the school library, the internet and conducting independent research projects.

Equality of Participation and Access

We view the Science programme as playing a key role in ensuring equality of opportunity for all children.

- The programme at each class level will be flexible so that the learning requirements of all children may be addressed.
- We provide an equal educational experience for both boys and girls as we recognise that stereotyped expectations of gender roles can inhibit children's educational achievements.

- Children with special needs will be included in all activities.
- No child will be excluded from workshops or fieldtrips due if parents/guardians are unable to cover the cost of the activities. In such instances the school will cover the cost.

Assessment:

Assessment in Science is concerned with the children's mastery of knowledge and understanding of the strands of the science programme and the development of skills and attitudes. Consequently, a broad range of assessment tools and approaches will be necessary. The following are among the assessment tools found useful in schools:

Teacher Observation:

Observations made by the teacher during practical science tasks will help to determine the development of process skills and attitudes. They will also help to establish the extent to which the children have mastered the knowledge aspect. The teacher will need to take an active role in science tasks and ask open-ended questions to gain insight into a child's understanding.

Teacher-designed tasks and tests:

Some representational record, whether written, drawn, sculpted or modelled, is necessary to build up a picture of the child's achievements. A wide variety of tasks should be provided for the children, including:

- Observing
- Analysing objects and processes and hypothesising about how systems work or are made
- Predicting outcomes of an investigation
- Collecting information from books and materials
- Asking questions
- Providing oral, written and pictorial accounts of investigations
- Displaying projects
- Using work cards or activity sheets
- Designing, making and evaluating models and structures

Teacher-designed tasks and tests:

- Using interactive multimedia programs to explore themes and complete a range of tasks and problems
- Exploring and engaging in practical investigations in the environment
- Completing teacher-designed tests on a unit(s)
- Displaying and reporting project work
- Drawing with labels (teacher can discuss drawing with child and annotate it as a result of asking questions)

Concept-mapping:

The child's initial ideas must be explored if they are to form a starting point for learning. Concept-mapping helps children to record and discuss their ideas (in other words, brainstorming). This will help enormously to see what preconceived ideas the children may have. It is also useful as an assessment tool at the end of a unit to see if there has been any progression.

KWL chart:

This will help the children to recognise what they know about a topic prior to starting. The children are encouraged to decide what they would like to know and review what they have learned when the topic is completed.

Work Samples, portfolios and projects:

The collection of samples of the children's work in the copybooks/ assessment folder/ scrapbook provides one of the most important tools of assessment

Records of progress will be kept by the teacher and discussed with :

- parents during parent teacher meetings
- children in teacher pupil conferencing
- And as part of the end of year report.

I.C.T:

Computers, tablets and ICT provides opportunities for the children to demonstrate what they know and understand about the topic and what historian skills they can apply.

Organisational Planning:

Timetabling:

Teachers allocate a specific weekly amount of time to S.E.S.E. in their timetable. Time allocation may be flexible, as work in each area will complement learning in other subjects.

Teachers should ensure that pupils attending supplementary teaching are included for as much of the Science programme as possible.

There is discretionary time available each week that teachers can occasionally use to support the Science curriculum

Homework:

Homework is given in science when it is deemed appropriate. Project work can often be included in homework.

Individual Teachers' Planning and Reporting:

- Teachers will base their yearly and short-term plans on the approaches set out in the whole school plan for science.
- Each individual teacher will be responsible for their own short and long term planning
- Work completed will be recorded using monthly planning. These documents will be used to aid reviewing and developing the whole school policy and individual teacher preparation for the following years. Any changes staff wish to make to improve the whole school plan for science will be discussed at staff meetings.

Staff Development:

Teachers have access to reference books, resource materials, equipment and websites dealing with geography. Teachers research new approaches and methodologies. They are encouraged to attend in-service courses and to impart/discuss information acquired at these courses. Time is allocated at staff meetings to discuss aspects of the curriculum subject areas. Skills and expertise within the school are shared and developed through input at staff meeting.

Parental Involvement:

- Parents are kept informed of developments in the school's science programme through meetings, online platforms and school displays.
- Parents with particular expertise may be invited to address classes.
- Parents are actively involved through the Green School Programme and Garden projects.
- As per the homework policy, parents should monitor their children's work and check finished work.

Community Links:

Ballymore National School is at the heart of the community. We strive to ensure that all members of the school and wider community are involved in school projects and activities where appropriate.

Safety:

During practical work teachers should be aware of the safety implications of any exploratory or investigative work to be undertaken. Children should be encouraged to observe safety procedures during all tasks. There are many safety issues to consider including:

Plants and Animals:

- Disposable gloves will be used when investigating hedgerows. Children should never handle unknown or unfamiliar plants, especially fungi. Gloves will also be worn when handling birds or animals. Hand washing should be encouraged after handling plants and animals.

Electricity:

- Children should only use low-voltage battery powered devices. Mains electricity should never be used for electricity and magnetism experiments. If mains powered equipment is used then it should be connected and operated by the teacher only. Children should be repeatedly warned about the danger of mains electricity.

Equipment:

- The use of glass apparatus and sharp-edged tools should be avoided except

under the direct supervision of the class teacher. Use plastic where possible. Thermometers should be handled carefully. Non mercury thermometers are in use.

Eyes:

- Children should never use lenses, binoculars or other lenses devices to look directly at the sun or other intense source of light. This includes dark glass and plastic.

Chemicals:

- When household chemicals are used, they will be purchased to meet the requirements of the experiment and any surplus is stored in a safe place. We avoid any chemical containing bleach. These chemicals will not be stored in the science resource boxes.

Polythene Bags:

- Children should be warned of the dangers of using these bags as they may cause suffocation.

Heat:

- Under no circumstances should the children themselves handle matches or lighters. If using candles during an experiment please ensure that they are securely fastened. Lighted candles should never be moved. Care should be taken to avoid situations where children may be tempted to lean across a lighted candle. Long hair should be tied back and loose sleeves secured.
- Any heating can be done with hot water from a tap or from a kettle held by an adult. Flammable liquids should never be used. Small portable gas burners are relatively safe provided that they can be securely mounted to prevent them from toppling over. If they are used, they should be sited clear of curtains, notice boards and busy areas.

Cleanliness and Hygiene:

- Random sniffing and tasting should be discouraged. The teacher should explain that anything the children are asked to smell or taste has been carefully chosen for that activity. The sharing of spoons or other utensils should not be permitted. Hand washing should be encouraged before food activities.

Resources and Equipment:

- There is a library of CDs, DVDs and ICT programmes that support the science programme available.
- Teachers have access to a broad range of textbooks and ancillary materials which will support the strands and strand units being taught. Therefore, teaching and learning is not textbook driven and uses the prior knowledge of the child as a starting point.
- Teacher's manuals/posters are available for numerous topics and themes.

Books: see Appendix 2.

Additional Science Supplies: see Appendix 3.

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's plans
- Continuity of content and methodology will be evident in teacher's preparation and monthly reports
- Ongoing assessment, formal and informal will show that pupils are acquiring understanding of concepts and proficiency in scientific skills appropriate to their age and ability.
- Positive feedback from teachers/pupils/ parents.

Implementation:

Roles Responsibilities:

This plan will be implemented and developed in both classrooms by the teachers. We will monitor the implementation/ progress of the Science Plan by formal and informal discussions amongst the staff and by encouraging and accepting feedback on its implementation.

Timeframe:

Following consultation with the Parents Association and ratification from the Board of Management, this policy will be implemented during term 1 of the school year 2022/2023.

Review:

This policy will be reviewed in 2026 or earlier if required.

Teachers, pupils, parents, Board of Management and Department of Education may be involved in any future review.

Ratification and Communication:

This plan was communicated to and ratified by the Board of Management in March 2022.

Signed: _____

Chairperson

Date: _____

Signed: _____

Principal

Date: _____

Appendix 1: Curriculum Content and Skills for each class level:

Strand: Living things

Strand unit: Myself /Human life (3rd – 6th)

Infants	First and second	Third and fourth	Fifth and sixth
<i>Variety and characteristics of humans</i>	<i>Variety and characteristics of humans</i>	<i>Variety and characteristics of humans</i>	<i>Variety and characteristics of humans</i>
Identify parts of the male and female body	Name and identify external parts of the male and female body and their associated functions or senses	Become aware of the names and structures of some of the body's major external and internal organs	Develop a simple understanding of the structure of some of the body's major internal and external organs
Recognise and measure physical similarities and differences between people	Recognise and/or measure physical similarities and differences between individuals		
	Become aware of the role of each sense in detecting information about the environment and in protecting the body		
<i>Human life processes</i>	<i>Human life processes</i>	<i>Human life processes</i>	<i>Human life processes</i>
Become aware of some changes that occur as children grow and mature	Recognise that all living things grow and change	Understand the physical changes taking place in both male and female during growth to adulthood	Develop an understanding of the reproductive systems of both male and female and of the physical changes taking place in both male and female during growth to adulthood
Become aware that people have a variety of needs for growth	Recognise that physical growth has taken place since birth Identify some requirements for growth and development in the human		
Develop an awareness of human birth	Begin to identify the main phases of the human life cycle		
Use all the senses (touch, smell, sight, taste, hearing) to become aware of and explore environments	Use all the senses to become aware of and explore environments		
		Develop an awareness of the importance of food for energy and growth	
		Become aware of and investigate breathing	Become aware of and investigate breathing
		Explore and investigate how people move	
			Identify and understand ways in which the body protects itself against disease and infection
			Develop a simple understanding of food and nutrition

Strand: Living things

Strand unit: Plants and animals/Plant and animal Life (5th & 6th)

Infants	First and second	Third and fourth	Fifth and sixth
<i>Variety and characteristics of living things</i>	<i>Variety and characteristics of living things</i>	<i>Variety and characteristics of living things</i>	<i>Variety and characteristics of living things</i>
Observe, discuss and identify a variety of plants and animals in different habitats in the immediate environment	Observe, identify and explore a variety of living things in local habitats and plants and animals in different environments	Observe, identify and examine the animals and plants that live in environments	Observe, identify and examine the animals and plants that live in local habitats and environments
Become aware of animals and plants of other environments	Develop some awareness of plants and animals from wider environments	Develop an increasing awareness of plants and animals from wider environments	Develop an increasing awareness of plants and animals from wider environments Recognise that there is a great diversity of plants and animals in different regions and environments Identify the interrelationships and interdependence between plants and animals in local and other habitats
Sort and group living things into sets	Group and sort living things into sets according to certain characteristics	Sort and group living things into sets according to observable features Use simple keys to identify common species of plants and animals	Group and compare living things into sets according to their similarities and differences Become familiar with the characteristics of some major groups of living things Construct and use simple keys to identify locally occurring species of plants and animals
Recognise and identify the external parts of living things	Recognise and describe the parts of some living things		
		Observe and explore some ways in which plant and animal behaviour is influenced by, or adapted to, environmental conditions	Observe and explore some ways in which plant and animal behaviour is influenced by, or adapted to, environmental conditions
		Understand that plants use light energy from the sun Come to appreciate that animals depend on plants and indirectly on the sun for food	Become aware of the sun as a source of energy for plants through photosynthesis
		Discuss simple food chains	
	Recognise that trees are plants		

	<i>Processes of life</i>	<i>Processes of life</i>	<i>Processes of life</i>
Observe growth and change in some living things	Appreciate that living things have essential needs for growth	Become aware of some of the basic life processes in animals	Become aware of some of the basic life processes in animals and plants
Explore conditions for growth of bulbs and seeds	Explore, through the growing of seeds, the need of plants for water and heat	Investigate the factors that affect plant growth	Investigate the factors that affect plant growth
Become aware that animals and plants undergo seasonal change in appearance or behaviour	Understand that seasonal changes occur in living things and examine the changes in plant and animal life during the different seasons		
	Investigate how plants respond to light		
			Understand some ways in which plants reproduce

Strand: Materials

Strand unit: Properties and characteristics of materials

Infants	First and second	Third and fourth	Fifth and sixth
Observe a range of familiar materials in the immediate environment	Identify and investigate a range of common materials used in the immediate environment	Identify and investigate a range of common materials used in the immediate environment	Identify and investigate a widening range of common materials used in the immediate environment
Describe and compare materials, noting the differences in the colour, shape and texture	Describe and compare materials, noting the differences in colour, shape and texture	Describe and compare materials, noting the differences in colour, shape and texture	
Group materials according to certain criteria	Group materials according to their properties	Group materials according to their properties	Group materials according to their properties and/or composition
Investigate materials for different properties	Identify and investigate materials that absorb water and those that are waterproof		
Know about some everyday uses of common materials			Identify how materials are used
	Begin to distinguish between natural and manufactured materials	Distinguish between raw and manufactured materials	Explore the origins of these materials
	Begin to explore how different materials may be used in the construction of homes suited to their environments	Investigate how materials may be used in the construction	
		Recognise that materials can be solid, liquid or gaseous	Recognise that materials can be solid, liquid or gas form
			Recognise that gas, such as air, occupies space, has mass and exerts pressure
			Become aware that air is composed of different gasses
			Become aware of some of the practical applications of these gasses in everyday life
			Recognise that some materials decay naturally while others survive a long time in the environment

Strand: Materials

Strand unit: Materials and change

Infants	First and second	Third and fourth	Fifth and sixth
	<i>Heating and cooling</i>	<i>Heating and cooling</i>	<i>Heating and cooling</i>
Explore the effects of water on a variety of materials			
Observe and describe materials when they are wet and when they are dry			
Identify some materials that are waterproof			
Explore the effect of heating and cooling on everyday objects, materials and substances	Explore the effects of heating and cooling on a range of liquids and solids Explore ways in which liquids and solids may be kept hot or cold	Explore the effects of heating and cooling on a range of liquids, solids and gasses	Explore the effects of heating and cooling on a range of liquids, solids and gasses
	Become aware of and investigate the suitability of different kinds of clothes for variations in temperature	Investigate the suitability of different kinds of clothes for variation in temperature	
		Experiment to establish which materials are conductors of heat or insulators	Experiment to establish which materials are good conductors of heat or good insulators
			Identify ways in which homes and buildings are heated and insulated
			Recognise how heating and cooling can be used to preserve food
	<i>Mixing and other changes</i>	<i>Mixing and other changes</i>	<i>Mixing and other changes</i>
	Begin to investigate how materials may be changed by mixing	Investigate how materials may be changed by mixing	Investigate how a wide range of materials may be changed by mixing
	Investigate the characteristics of different materials when wet and dry	Investigate the characteristics of different materials when wet and dry	Investigate the effects of light air and water on materials
		Examine the changes that take place in materials when physical forces are applied	Examine the changes that take place in materials when physical forces are applied
		Explore some simple ways in which materials may be separated	Explore simple ways in which materials may be separated
			Recognise that oxygen is required for burning

Strand: Energy and forces

Strand unit: Forces

Infants	First and second	Third and fourth	Fifth and sixth
Explore, through informal activities with toys, forces such as pushing and pulling	Explore how objects may be moved by pushing and pulling	Explore how objects may be moved	Identify and explore how objects and materials may be moved
Explore how the shape of objects may be changed by squashing, pulling and other forces			
Investigate how forces act on objects	Investigate how forces act on objects		
	Become aware of and explore how moving water and moving air can make things move	Investigate the pushing force of water	
	Observe and investigate the movement of objects such as toys on various materials and surfaces	Explore the effects of friction on movement through experimenting with toys and objects on various surfaces	Explore the effect of friction on movement and how it may be used to slow or stop moving objects Explore how friction can generate heat
		Explore how some moving objects may be slowed down	
		Investigate falling objects	
		Explore how levers may be used to help lift different objects	Explore how levers may be used to help lift different objects
			Come to appreciate that gravity is a force
			Become aware that objects have weight because of the pull of gravity

Strand: Energy and forces

Strand unit: Light

Infants	First and second	Third and fourth	Fifth and sixth
Identify and name different colours		Investigate that light can be broken up into many different colours	Investigate the splitting and mixing of light
Sort objects into sets according to colour			
Observe colours in the local environment			
Explore dark and bright colours and become aware of different shades of colour			
Discuss the differences between day and night, light and shade			
Explore how shadows are formed			
	Recognise that light comes from different sources	Recognise that light comes from different natural and artificial sources	Know that light travels from a source
	Recognise that light is needed in order to see		Appreciate the importance of sight
	Investigate the relationship between light and materials	Investigate the relationship between light and materials	Investigate the refraction of light
	Recognise that the sun gives us heat and light, without which we could not survive	Recognise that the sun gives us heat and light, without which people and animals could not survive	Understand the role of sunlight in photosynthesis and appreciate that the sun gives us heat and light without which people could not survive
	Become aware of the dangers of looking directly at the sun	Be aware of the dangers of looking directly at the sun	Be aware of the dangers of excessive sunlight
		Learn that light is a form of energy	Learn that light is a form of energy
		Investigate how mirrors and other shiny surfaces are good reflectors of light	Investigate how mirrors and other shiny surfaces are good reflectors
			Explore how objects may be magnified using simple lens or magnifier

Strand: Energy and forces

Strand unit: Sound

Infants	First and second	Third and fourth	Fifth and sixth
Recognise and identify a variety of sounds in the environment	Recognise and identify a variety of sounds in the environment	Recognise and identify a variety of sounds in the environment	Recognise and identify a variety of sounds in the environment and appreciate the importance of noise control
Identify and differentiate between high and low sounds, loud and soft sounds	Identify and differentiate between high and low sounds, loud and soft sounds		
Explore ways of making different sounds using a variety of materials	Explore ways of making different sounds using a variety of materials	Understand and explore how different sounds may be made by making a variety of materials vibrate	Understand and explore how different sounds may be made by making a variety of materials vibrate
	Design and make a range of simple percussion instruments	Design and make a range of simple string instruments using an increasing variety of tools and materials	Design and make simple woodwind instruments
		Explore the fact that sound travels through materials	Explore how sound travels through materials
		Learn that sound is a form of energy	Learn that sound is a form of energy
			Appreciate the importance of hearing

Strand: Energy and forces

Strand Unit: Magnetism

Infants	First and second	Third and fourth	Fifth and sixth
Use magnets of different shapes and sizes in purposeful play to explore their effects on different materials	Use magnets of different shapes and sizes in purposeful play to explore their effects on different materials	Learn that magnets can push or pull magnetic materials	Learn that magnets can push or pull magnetic materials
Investigate the fact that magnets attract certain materials	Investigate that magnets attract magnetic materials, such as iron and steel	Examine and classify objects and materials as magnetic and non-magnetic	
	Investigate that magnets attract certain materials through other materials	Investigate that magnets attract certain materials through other materials	
		Explore the relationship between magnets and compasses	
		Explore how magnets have poles and investigate how these poles attract and repel each other	
			Explore the use of magnets to lift and hold objects
			Investigate how magnets may be made

Strand: Energy and forces

Strand Unit: Electricity

Infants	First and second	Third and fourth	Fifth and sixth
Become aware of the uses of electricity in school and at home Identify some household appliances that use electricity	Become aware of the uses of electricity in school and at home Identify some household appliances that use electricity		
Become aware of the dangers of electricity	Become aware of the dangers of electricity		Become aware of how some common electrical appliances work
	Explore the effects of static electricity	Become aware of the dangers of electricity	Become aware of and understand the dangers of electricity
		Explore the effects of static electricity	
		Observe the effects of static electricity on everyday things in the environment	
		Learn about electrical energy	Learn about electrical energy
		Investigate current electricity by constructing simple circuits	Investigate current electricity by constructing simple circuits
		Examine and group materials as conductors (those that conduct electricity) and insulators (those that do not allow electricity to pass through)	

Strand: Energy and Forces

Strand Unit: Heat

Infants	First and second	Third and fourth	Fifth and sixth
Recognise the difference between hot and cold in terms of weather, food, water and the body	Learn that temperature is a measurement of how hot something is	Recognise that temperature is a measurement of how hot something is	
Identify ways of keeping objects and substances warm and cold			
	Become aware of the different sources of heat energy	Understand that the sun is Earth's most important heat source	Recognise a variety of sources of heat
	Measure and compare temperature in different places in the classroom, school and environment	Measure and compare temperature in different places in the classroom, school and environment and explore the reasons for variations	
		Measure changes in temperature using a thermometer	Measure and record temperature using a thermometer
		Learn that heat can be transferred	Know that heat energy can be transferred
			Experiment with a range of materials to establish that heat may be transferred in different ways
		Identify ways in which homes, buildings and materials are heated	

Strand: Environmental awareness and care

Strand Unit: Environmental awareness

Infants	First and second	Third and fourth	Fifth and sixth
		Identify positive aspects of natural and built environments through observation, discussion and recording	Identify positive aspects of natural and built environments through observation, discussion and recording
		Identify the interrelationship of the living and non-living elements of local and other environments	Explore some examples of the interrelationship of the living and non-living aspects of local and other environments
		Become aware of the importance of the Earth's renewable and non-renewable resources	Become aware of the importance of the Earth's renewable and non-renewable resources
			Foster an appreciation of the ways in which people use the Earth's resources
		Come to appreciate the need to conserve resources	Come to appreciate the need to conserve resources
		Recognize how the action of people may impact upon environments	

Strand: Environmental Awareness and Care

Strand Unit: Caring for my locality/Caring for the environment (3rd – 6th)

Infants	First and second	Third and fourth	Fifth and sixth
Develop a sense of responsibility for taking care of and improving the environment	Realise that there is both an individual and a community responsibility for taking care of the environment	Realise that there is a personal and community responsibility for taking care of the environment	Come to appreciate individual, community and national responsibility for environmental care
Identify, discuss and implement simple strategies for improving and caring for the environment	Identify, discuss and implement simple strategies for improving and caring for the environment	Examine a number of ways in which the local environment could be improved or enhanced	Participate in activities that contribute to the enhancement of the environment
	Identify, discuss and implement simple strategies for protecting, conserving and enhancing the environment		
Observe, discuss and appreciate the attributes of the local environment	Identify, discuss, and appreciate the natural and human features of the local environment		
Appreciate that people share the environment with plants and animal life	Begin to recognize that people, animals and plants depend on one another		
	Observe and develop an awareness of living things in a range of habitats in local and wider environments		
	Observe the similarities and differences among plants and animals in different local habitats		
	Develop an awareness that air, water, soil, living and non-living things are essential to the environment		
	Become aware of ways in which the environment can be polluted or harmed	Identify and discuss a local, national or global environmental issue	Identify and discuss a local, national or global environmental issue

Strand: Environmental Awareness and Care

Strand Unit: Science and the environment

Infants	First and second	Third and fourth	Fifth and sixth
		Begin to explore and appreciate the application of science and technology in familiar contexts	Appreciate the application of science and technology in familiar contexts
		Identify some ways in which science and technology contributes positively to society	Examine some ways in which science and technology have contributed positively to the use of Earth's resources
			Recognise the contribution of scientists to society
		Recognize and investigate human activities which have positive or adverse effects on local and wider environments	Recognize and investigate aspects of human activities that may have positive or adverse effects on environments

Appendix 2: Books available to teachers to support the delivery of the Science Curriculum

Appendix 3: Additional resources to support the delivery of the Science Curriculum