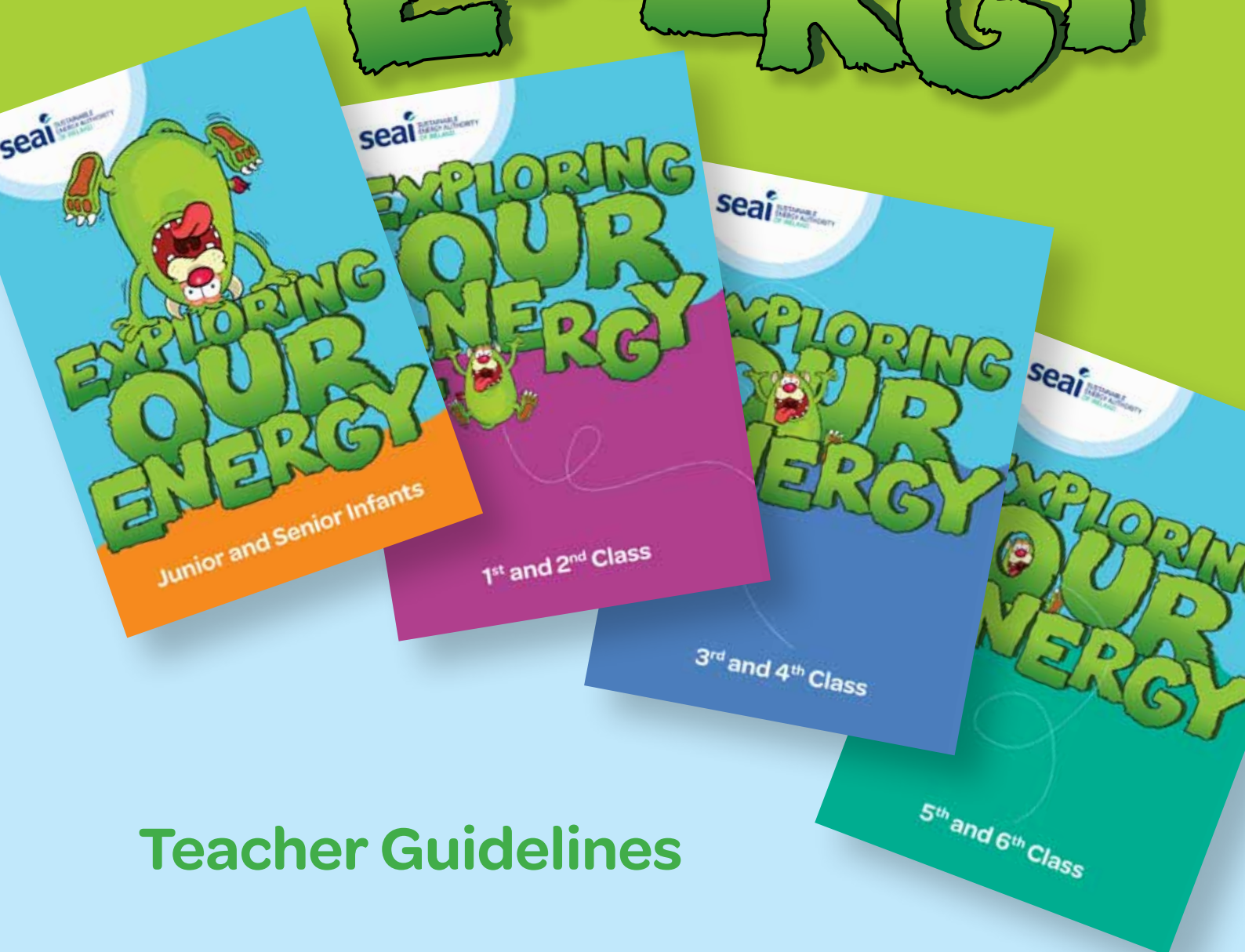


EXPLORING OUR ENERGY



Teacher Guidelines

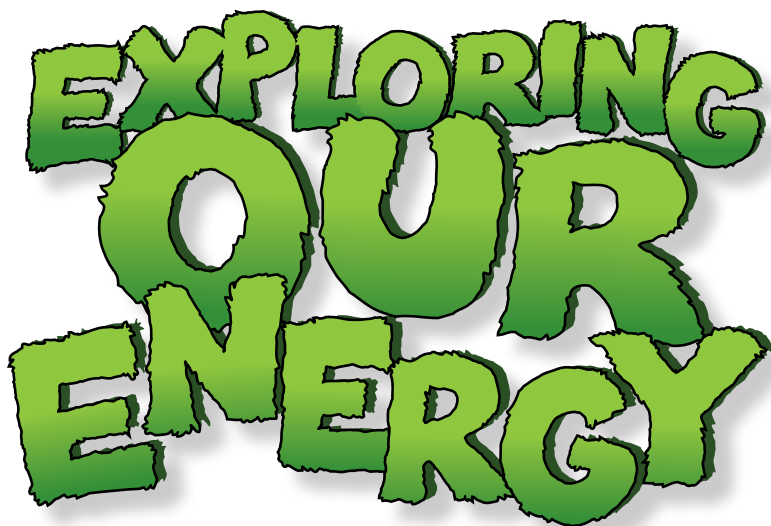
What is Exploring our Energy all about?

Exploring our Energy is an exciting new programme to help children learn about energy through the primary science curriculum. The programme explores energy and science in a real world way, exploring how and why as a society, we need to develop new ways of looking at our energy resources. The Sustainable Energy Authority of Ireland aims to move Irish society towards a clean, sustainable energy future. It's crucial that our children be educated about why we need to do this, and how.

Exploring our Energy is underpinned by and supports the Primary Science Curriculum (DES, 1999). It will help children to develop their knowledge about energy, energy efficiency and conservation. Based on sound theory, the programme involves good practice, real life learning experiences and whole-school approaches.

Education, at all levels, plays a crucial role in helping our citizens to understand and act on issues concerning our welfare and that of the environment. One of the most valuable things that a teacher can do is to work with children to enable them to develop a critical understanding of issues which will affect their lives in the future.

Through the Exploring our Energy programme, you, as a teacher, can empower your pupils with knowledge about climate change and sustainable energy, thus unleashing their potential as energy activists in their schools, homes and society at large. This in turn will bring about the changes that Irish society must make in order to ensure a prosperous future.



This programme has been developed by the Science Education and Digital Learning Units in St. Patrick's College, Dublin.

Outline of the programme

As with the Primary Science Curriculum, Exploring our Energy is based on a spiral approach, in which similar themes are explored at each class level. There are four programmes, one for each age group – Junior and Senior Infants, 1st and 2nd Class, 3rd and 4th Class, 5th and 6th Class. Within each programme are a number of chapters, which have the following structure:

- **Aims & overview** – these are identified at the beginning of each chapter
- **Working scientifically skills** – the ones relevant to each chapter are outlined
- **Resources** – those required for each lesson are listed
- **Main body of lesson**
 - **Setting context / finding out children’s ideas:** Children reflect on an image or question, or discuss their ideas and experiences concerning the energy theme being addressed. Questions to promote discussion are provided.
 - **Testing ideas:** The children engage in ‘hands-on’, inquiry-based activities that develop their scientific skills and knowledge about energy. Questions to guide learning are provided for every type of activity. These activities include:
 - Discussion
 - Observation
 - Sorting and classifying
 - Measuring and recording
 - Investigations
 - Teacher-led investigations
 - Design & make
 - Research
- **Assessment:** Each lesson ends with a discussion and includes a range of carefully devised questions that support teachers in assessing the children’s learning.
- **Extension:** In every chapter, suggestions for extension activities are provided, with links to relevant activities in the SEAI education programme.

These are available to download from www.seai.ie/schools/primary_schools/resources_available
Many are also available to order, free of charge, from schools@seai.ie

Interactive whiteboard (IWB)

Each of the four programmes is accompanied by a set of digital resources to support teaching and learning. These resources are in the form of digital flipcharts, for use with an interactive whiteboard.

Flipchart activities enhance lesson content and provide opportunities for interaction through class discussion, paired/group dialogue and feedback. Various techniques are used to facilitate children’s direct kinaesthetic interaction via activities that promote problem-solving and other thinking skills.

For each page of the flipchart, teacher notes include suggestions for use along with sample questions to stimulate discussion.

PowerPoint slides

For those teachers who do not have access to an IWB, PowerPoint slides have been prepared as an alternative. The PowerPoint slides contain the same images as in the IWB flipcharts and include Teacher notes in the PowerPoint notes pages. While the slides cannot involve direct kinaesthetic interaction by the children, the images promote interactivity through class discussion and dialogue. You can display the slides with a data projector.

Photo-copiable masters (PCMs)

Various types of PCMs have been included in many of the chapters, these will support teaching and learning in different ways:

- They can be used as a tool for formative and summative assessment (Assessment for Learning and Assessment of Learning).
- They will enable children to apply and develop their analysing (sorting and sequencing) skills.
- They will help the children to plan and record their investigations.
- They will stimulate discussion and debate.





Exploring our Energy provides children with numerous opportunities to discuss and reflect on a range of issues relating to energy in their lives. There is an extensive range of exciting investigations and activities that will make learning about energy relevant and lots of fun.



Integration with the science curriculum

All of the investigations and activities are directly related to the content in the strand units of the Primary Science Curriculum (see the table below).

Exploring our Energy: Links with strand units of Primary Science Curriculum

	Chapter 1	Chapter 2	Chapter 3	Chapter 4	Chapter 5
Jnr/ Snr 	Myself	Magnetism & electricity	Heat Properties & characteristics of materials Materials & change	Heat Properties & characteristics of materials Materials & change	Caring for my locality and area
1st & 2nd 	Myself	Heat Forces Properties & characteristics of materials Magnetism & electricity	Light	Heat	Caring for my locality and area
3rd & 4th 	Plants & animals	Plants & animals	Geography link: Weather, Climate & atmosphere	Heat Properties & characteristics of materials	Caring for my locality and area
5th & 6th 	Caring for my locality & area Magnetism & electricity	Weather, Climate & atmosphere Forces	Forces Magnetism & electricity	Heat Properties and characteristics of materials Materials & change	Caring for my locality and area

Inquiry-based approach

Exploring our Energy draws on real-life experiences and contexts in the home and at school, and uses these as opportunities for learning. The children are provided with frequent opportunities to think about and make decisions on a range of issues relating to energy in their lives.

The programme is founded on Inquiry-Based Science Education (IBSE). For example, the children are given a question or a scenario that poses a problem to be investigated. They then have to plan (usually in groups) how they are going to carry out their investigation. They have to make and record predictions, measure, record and interpret results, and communicate their findings.

Discussion and reflection

There are many opportunities for discussion and reflection, which develop the children's dialogical and reflection skills. The programme provides questions to promote discussion, thus supporting teachers in facilitating classroom and group debate. It also facilitates formative and summative assessment.

Designing and making

The programme encourages the children to explore, plan, make and evaluate – the four designing & making skills or stages. Designing & making activities give them opportunities to develop an interest in how processes are applied in everyday situations. They also promote the creative and imaginative aspects of the scientific process. (For further details on Designing & Making, see: **NCCA Science Curr.pdf**).

Exploring our Energy – the multiple benefits

Teaching the Exploring our Energy programme will bring many benefits:

- **Develops important knowledge and skills:** Children gain essential knowledge about energy and an understanding of the science underpinning energy, energy resources, use and conservation.
- **Is fun and rewarding:** The programme is very enjoyable for teachers and pupils alike.
- **Is easy to teach:** The programme makes teaching about energy issues easy, while children tend to get highly engaged in what they see as relevant to their own lives and future well-being.
- **Benefits school overall:** Education for sustainability helps to improve teaching and learning more generally in the school.
- **Benefits young people and society:** Children develop behaviours that benefit them and society in general.
- **Helps to ensure a better future:** Overall, the programme will help children gain an understanding of our current energy resource dependencies and potential future solutions.

For more information...

To access the **Exploring our Energy** programme including all resources go to www.seai.ie/schools/primary_schools
Teachers will also find a range of background information on energy and details of educational material.