Earth & Space Science

Grade 5

Written by Tracy Bellaire

The activities in this book have two intentions: to teach concepts related to earth and space science and to provide students the opportunity to apply necessary skills needed for mastery of science and technology curriculum objectives.

The experiments in this book fall under topics that relate to three aspects of earth and space science: **Conservation of Energy, Renewable and Non-Renewable Resources,** and **Weather**. In each section you will find teacher notes designed to provide you guidance with the learning intention, the success criteria, materials needed, a lesson outline, as well as provide some insight on what results to expect when the experiments are conducted. Suggestions for differentiation are also included so that all students can be successful in the learning environment.

Tracy Bellaire is an experienced teacher who continues to be involved in various levels of education in her role as Differentiated Learning Resource Teacher in an elementary school in Ontario. She enjoys creating educational materials for all types of learners, and providing tools for teachers to further develop their skill set in the classroom. She hopes that these lessons help all to discover their love of science!

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At A Glance

Learning Expectations	Forms of Energy	Energy Transformation	Invention Fair	Energy Sources	Energy Conservation	Researching Resources	Weather Patterns	The Heat of the Sun	Precipitation	Cloud Formation	Weather Instruments	Extreme Weather
Knowledge and Understanding Content												
Recognize that energy is present in different forms, and that it exists in two main states.	•											
Identify forms of energy and describe how it is transformed from one form to another form as it is used.		•	•									
Describe how energy is stored and lost as it transforms into another form of energy.			•									
Identify various renewable and non-renewable sources of energy; determine advantages and disadvantages of usage.				•								
Recognize the effects of modern day technologies on energy consumption and assess opportunities for reduction.					•							
Research local resources and describe how they are harvested and developed into products.						•						
Determine different types of weather and describe daily weather patterns.							•					
Determine the effects of the sun's heat energy.								•				
Describe the water cycle and measure weather in terms of precipitation.									•			
Recognize the basic cloud types and describe how clouds are created.										•		
Determine the measure of weather in terms of wind speed and direction.											•	
Differentiate between weather and climate; research and report on a severe weather event.												•
Thinking Skills and Investigation Process												
Make predictions, formulate questions, and plan an investigation.		•	•		•	•			•	•	•	
Gather and record observations and findings using drawings, tables, written descriptions.	•	•	•	•	•	•	•	•	•	•	•	•
Recognize and apply safety procedures in the classroom.	•	•	•	•	•	•	•	•	•	•	•	•
Communication												
Communicate the procedure and conclusions of investigations using demonstrations, drawings, and oral or written descriptions, with use of science and technology vocabulary.	•	•	•	•	•	•	•	•	•	•	•	•
Application of Knowledge and Skills to Society and the Environment												
Analyze the impact of human uses of energy sources and natural resources on the environment and society, and contemplate methods of reduction.				•	•	•						
Evaluate the effects of energy consumption, then recognize and implement methods of energy conservation.					•							
Analyze the impact of human actions on the changes in climate.												•

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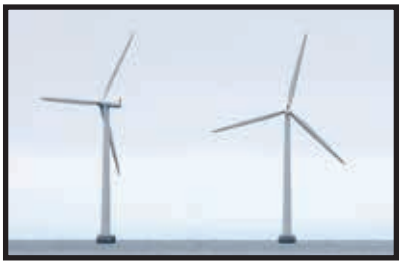
Renewable and Non-Renewable Sources

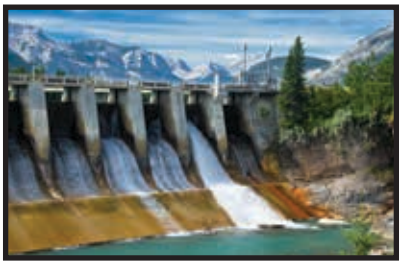
Renewable energy sources are those that will not run out. The sun will keep shining, the wind will keep blowing, and the rivers will keep flowing. These resources are constantly being renewed in the course of daily life in the natural world. The renewable sources include sun, wind, tides, rivers, and plant matter. Renewable sources can provide a lot of energy while, at the same time, do far less environmental damage. They do not produce as much pollution and waste.

Non-Renewable energy sources are those that can be used up and not last forever. It takes thousands of years to replace some of these sources. Non-renewable sources include fossil fuels like coal, oil, natural gas, and chemical energy. Non-renewable sources are reliable to obtain and are cheaper to convert to energy. Most of the world continues to rely on these sources. However, they produce greater pollution and waste and are presently causing the greatest environmental damage.

Use words in the Word Box to match the names of the energy sources with the pictures. Next, place an **R** (renewable) or **NR** (non-renewable) beside each name.

Nuclear **Solar** **Hydroelectric** **Wind** **Fossil Fuels** **Chemical**





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Energy Sources

Use the words from the Word Box to match the name of the energy source to the clues below.

Nuclear Solar Hydroelectric Wind Fossil Fuels Chemical

1) Power made by forcing water through narrow channels that will turn gigantic blades in a turbine and create electricity. _____

2) Natural resources like coal, oil, and natural gas are burned in order to produce electricity. _____

3) Uranium rock is heated so that the atoms are broken up. This creates an enormous amount of heat. _____

4) When certain chemicals are combined with certain metals, electrical energy is produced. _____

5) This is the best source of unlimited energy. It is clean and non-polluting. However, at the present time, it is not the most practical source. _____

6) This is one of the oldest sources of energy. However, their generators can be noisy, take up a lot of room, and have to be located where their source is strongest. _____

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Name:

Sourcing It Out!

You have learned a lot about the energy sources that provide electricity for our usage in our daily lives.

Get on Task!

Your task now is to research the energy sources in the chart below and list the advantages and disadvantages of harvesting and using each source.

Energy Source	Advantages	Disadvantages
Hydroelectric		
Nuclear		
Fossil Fuels		
Wind Power		
Solar Power		

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