

Electricity and Magnetism - Science Grade 7

<i>What I want students to know, do and understand?</i>		
Concept(s)	Impact, force, cause/effect	
Big Idea	Curricular Competencies	Content
<p>The electromagnetic force produces both electricity and magnetism.</p>	<p>QUESTIONING AND PREDICTING</p> <ul style="list-style-type: none"> • Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal interest • Make observations aimed at identifying their own questions about the natural world • Identify questions/problems to solve through scientific inquiry • Formulate alternative hypotheses based on their questions • Make predictions about the findings of their inquiry <p>PLANNING AND CONDUCTING</p> <ul style="list-style-type: none"> • Collaboratively plan a range of investigation types, including field work and experiments, to answer their questions or solve problems they have identified • Measure and control variables through fair tests • Observe, measure, and record data using equipment, including digital technologies, with accuracy and precision • Use appropriate SI units and perform simple unit conversions • Ensure that safety and ethical guidelines are followed in their investigations <p>PROCESSING AND ANALYZING DATA AND INFORMATION</p> <ul style="list-style-type: none"> • Construct and use a range of methods to represent patterns or relationships in data, including tables, graphs, keys, models, and digital technologies as appropriate • Seek patterns and connections in data from their own investigations and secondary sources • Use scientific understandings to identify relationships and draw conclusions <p>EVALUATING</p> <ul style="list-style-type: none"> • Reflect on their investigation methods, including the adequacy of controls on variables (dependent and independent) and the quality of the data collected • Identify possible sources of error and suggest improvements to their investigation methods • Demonstrate an awareness of assumptions and bias in their own work and secondary sources • Demonstrate an understanding and appreciation of evidence (qualitative and quantitative) • Exercise a healthy, informed skepticism and use scientific knowledge and findings from their own investigations to evaluate claims in secondary sources • Consider social, ethical, and environmental implications of the findings from their own and others' investigations <p>APPLYING AND INNOVATING</p> <ul style="list-style-type: none"> • Contribute to care for self, others, community, and world through personal or collaborative approaches • Co-operatively design projects 	<p>Electricity is generated in different ways with different environmental impacts</p> <p>Electromagnetism</p> <ul style="list-style-type: none"> • the electromagnetic force is responsible for both electricity and magnetism • moving or changing a magnetic field relative to a wire produces electric current (e.g., electricity generation by a turbine) • an electric current passing through a wire produces a magnetic field (e.g., constructing a simple electromagnet using a wire, iron nail and battery)

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- Transfer and apply learning to new situations
 - Generate & introduce ideas when problem solving
- COMMUNICATING**
- Communicate ideas, findings, and solutions to problems, using scientific language, representations, and digital technologies as appropriate
 - Transfer and apply learning to new situations
 - Generate & introduce ideas when problem solving

How will I know my students have it?

Summative Assessment

GRASPS TASK: Power City Project

Goal: The students will demonstrate their understanding that electricity is generated in different ways with different environmental impacts.

Role: You are a member of Energy Education and have been hired by Power City to present information about what types of energy they should use to power their city.

Audience: Power City council members

Situation: Power City is a large city in Canada. The town council members are trying to figure out the best way to provide enough energy for their city. They want to use a combination of renewable and non-renewable resources.

Product/Performance: Your job is to convince the Power City Council Members why the city should use your energy sources over the other presenters. (poster, pamphlet or power point, and a 2-3 minute presentation)

Differentiation: scaffold the assignment with templates that provide some research facts, and sources to explore. Provide choice about the format of the product, and provide option to present to teacher only. Challenge students by providing maps that pose geographical structures that influence the efficiency of certain power sources.