Science

Brunswick School Department Grade 7 Electricity and Magnetism

	 Magnetism and electricity are related. Magnetism works because of a certain arrangement and type of
	atoms
Essential	 Electricity is the result of the movement of electrons.
Understandings	 The components of electrical systems are interrelated and are
	made up of sub-systems, which have inputs, outputs, and feedback
	loops.
	 A system requires individual parts working together.
	What is magnetism?
	What is electricity?
Essential	How are magnetism and electricity related?
Questions	 How does the arrangement of atoms cause magnetism? How does the movement of electrons cause electricity?
	 How does the movement of electrons cause electricity? How can an electrical circuit be considered a system?
	 Like charges repel and opposite charges attract
	 Certain substances conduct while others insulate against electrical
Essential	energy.
Knowledge	 Circuits can be set up to do work.
	 Magnets have magnetic poles that produce magnetic fields.
	 Magnets can be used to produce electricity.
	 Electricity can be used to create magnets.
	Ierms:
Vocabulary	a. magnet, magnetism, pole, domain, magnetic field, insulator,
v Ocabulal y	ohms watts resistor types of circuits (open complete
	short, parallel, series), motor, generator
	 Use magnets to show magnetic fields.
Essential	 Design and build a working electrical circuit.
Skills	 Design and build an electro-magnet.
	Science
	A. Unitying Themes
	Students apply the principles of systems models constancy
	and change, and scale in science and technology.
	a. Explain how individual parts working together in a system
	(including organisms, Earth systems, solar systems, or man-
Related	made structures) can do more than each part individually.
Maine Learning	A3.Constancy and Change
Results	Students describe how patterns of change vary in physical,
	biological, and technological systems.
	b. Give examples of systems including ecosystems, Earth systems, and technologies that appear to by unchanging
	(even though things may be changing within the system)
	and identify and feedback mechanisms that may be
	modifying the changes.

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	D. The Physical Setting
	D4.Force and Motion
	Students describe the force of gravity, the motion of objects, the
	properties of waves, and the wavelike property of energy in light
	waves.
Related	d. Describe and apply an understanding of how electric
Maine Learning	currents and magnets can exert force on each other.
Results	E. The Living Environment
	E2.Ecosystems
	d. Students examine how the characteristics of the physical,
	non-living (abiotic) environment, the types and behaviors of
	living (biotic) organisms, and the flow of matter and energy
	affect organisms and the ecosystem of which they are part.
Sample	 Design and build electric circuits using batteries, clip leads, bulbs,
Lessons	sockets, buzzers, switches, etc.
And	 Use compasses and other materials to produce and visualize a
Activities	magnetic field.
	 Design, build, and test an electro-magnet.
Sample	
Classroom	 Demonstrate the ability to build a complete circuit.
Assessment	 Following a protocol, demonstrate the ability to improve the design
Methods	of an electro-magnet.
	Publications:
	 <u>Discover: Electricity Files</u>
Sample	 Pamphlets created by Project Re-Seed volunteers
Resources	 <u>http://ippex.pppl.gov/interactive/electricity/intro.html</u>
	 <u>http://www.nvenergy.com/kids_safety/electric/index.html</u>
	 <u>http://education.jlab.org/reading/magnets.html</u>