

Wright City Science Curriculum

Grade	8th Grade
Unit of Study	Electric & Magnetic Forces
Length of Unit	4 Weeks

Sample Essential Questions	Sample Corresponding Big Ideas
How can objects push or pull each other without actually touching?	Forces at a Distance: Objects can push or pull each other without touching due to electric and magnetic forces.
What is responsible for carrying the force between magnets or charged objects?	Fields are Mediators: Invisible electric and magnetic fields exist in the space around charged or magnetic objects and are responsible for transmitting the force.
What factors can we change to control how strong an electric or magnetic force is?	Factors Affecting Strength: The strength of electric and magnetic forces is determined by specific, measurable factors (such as the distance between objects or the strength of the charge/magnet) and can be controlled.
In what ways are electricity and magnetism connected? How can we use our understanding of electric and magnetic forces to develop new technologies?	Electromagnetism: Electricity and magnetism are connected phenomena; electric currents can produce magnetic fields, and moving magnets can produce electric currents.
How do we know that electric and magnetic fields are real if we can't see them? What is the <i>evidence</i> ?	Evidence is Key: Scientific claims, such as the existence of fields, must be supported by evidence gathered through controlled investigations and experimental procedures.
What are the essential parts of an experiment needed to prove a non-contact force is at work?	Experimental Design: A strong experiment to demonstrate fields must be designed to show a cause-and-effect relationship (the presence of a field leads to a force) and include ways to observe or measure the non-contact interaction.

Missouri Learning Standards
Priority Standards
6-8.PS2.B.1: Analyze diagrams and collect data to determine the factors that affect the strength of electric and magnetic forces.
6-8.PS2.B.3: Conduct an investigation and evaluate the experimental design to provide evidence that electric and magnetic fields exist between objects exerting forces on each other even though the objects are not in contact.
Secondary Standards (Background Information)
6-8.PS3.B : Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

Unit 4 Sequence			
MLS	Topic(s)	Learning Targets	Academic Vocabulary
6-8.PS2.B.1	Electric and Magnetic Forces	I will be able to identify and explain the forces of nature that create electromagnetism.	Electric force, Magnetic force, Non-contact force, Electric field, Magnetic field, Electromagnetism, Electric current, Charge (charged object), Magnet, Gravity
		I will be able to use data to determine factors that affect the strength of electric and magnetic forces.	
6-8.PS2.B.3	Non-Contact Forces	I will be able to identify and explain how is it that Electric and Magnetic Forces are non-contact forces	
		I can design and carry out an experiment to show that electric forces can push or pull objects without touching them.	

MLS	Learning Activities	
6-8.PS3.B	Energy Transformations Notes	Must Do
6-8.PS3.B	Energy Transformation Lab	Must Do
6-8.PS3.B	Bill Nye: Energy Activity	Can Do
6-8.PS3.B	Energy Transformation Reading Comprehension Assignment	Can Do
6-8.PS2.B.1, 6-8.PS2.B.3	Electric & Magnetic Forces Notes	Must Do
6-8.PS2.B.1, 6-8.PS2.B.3	Electric & Magnetic Forces Lab	Must Do
6-8.PS2.B.1, 6-8.PS2.B.3	Generation Genius: Magnetism Assignment	Can Do
6-8.PS2.B.1, 6-8.PS2.B.3	Magnetic Forces Article Assignment	Can Do

Assessments		
MLS	Description or Location	Rubric/Location
6-8.PS2.B.1, 6-8.PS2.B.3, 6-8.PS3.B	Unit 4 Quiz 26/27	Pear Assessment

Additional Resources