Unit Design- Electricity & Magnetism

Middle School – Grade 8

Texts to be used:	
McDougal Littell & *Unit Resource Book (URB) where noted	Electricty & Magnetism (E&M)

RI Statements of Enduring Knowledge - (Established Goals):

PS 2 Energy is necessary for change to occur in matter. Energy can be stored, transferred and transformed, but cannot be destroyed.

Related Rhode Island GSE's (Understandings)	**RI Assessment Targets** Assessment Evidence *** **High Priority**
PS2 (7-8)- 6 **Students demonstrate an understanding of energy by…** **6a** using a real world example to explain the transfer of potential energy to kinetic energy. **6b** constructing a model to explain the transformation of energy from one form to another. (e.g. an electrical circuit changing electrical energy to light energy in a light bulb). **6c** explaining that while energy may be stored, transferred, or transformed, the total amount of energy is conserved. **'6d** describing the effect of changing voltage in an electrical circuit. .	***PS2 (5-8)-SAE+ POC- 6*** Given a real-world example, show that within a system, energy transforms from one form to another (i.e., chemical, heat, electrical, gravitational, light, sound, mechanical). • Particular effort should be made to engage student prior knowledge from fourth grade activities in Electricity & Magnetism Kit (see grade 4 curriculum) • Text reference:Chapter 1.3 pp. 28-35 **(E&M)** • Investigate what makes a circuit. Have students light a light bulb with battery as an open inquiry then have students do Investigation: How does resistance affect the flow of charge? P.28 **(Pay close attention to energy transfer including heat produced)** • Text reference: 3.0 -3.3, pp. 76-95, **(E&M)** • Investigation: What is the source of magnetism? P. 88 (**E&M)** • Investigation: How can a motor produce current? (**E&M)** • Investigation: How do magnets behave? p. 79, **(E&M)** **Connect to Forces & Motion and to student's prior activities in grade four science kit Magnetism & Electricity

Text to be used: **McDougal Littell** Electricty & Magnetism (E&M)			
	Focus Questions (Essential Questions)	**Instructional Activities & Investigations (INQ)**	**Big Ideas** (Understandings)
1	**How do moving electrical charges transfer energy?**	• Particular effort should be made to engage student prior knowledge from fourth grade activities in Electricity & Magnetism Kit (see grade 4 curriculum) • Text reference:Chapter 1.3 pp. 28-35 **(E&M)** • Investigate what makes a circuit. Have students light a light bulb with battery as an open inquiry then have students do Investigation: How does resistance affect the flow of charge? P.28 **(Pay close attention to energy transfer including heat produced)**	• What is a circuit in terms of electrical energy flow? • How is energy distributed or used in a circuit? • How is energy transformed when a circuit is used to light a light bulb? • Circuits control the flow of electrical energy?
2	**How is magnetism created by moving charges?** **How can magnetism create electrical current?**	Text reference: 3.0 -3.3, pp. 76-99, **(E&M)** Investigation: What is the source of magnetism? P. 88 (**E&M)** Investigation: How can a motor produce current? (**E&M) p.95**	• Electric current and magnetism are related. • Magnetism can create an electrical current • Electric current can produce magnetism.
3	**How does magnetic force vary with distance?****	Investigation: How do magnets behave? p. 79, **(E&M) ****Connect to Forces & Motion and to student's prior activities in grade four science kit Magnetism & Electricity	• Magnetic force is an inverse square law.