PreAP Physics

Ms. Zimmer

Lesson Title:	**Faraday's Electromagnetic PhET**
Standards (TEKS)	5.5D
Learning Objective(s):	• Draw magnetic field lines on a magnet. • Determine how a pickup coil can be used to generate electricity. • Determine the characteristics of a strong electromagnet. • Define a generator and explore how it interacts with a magnetic field to create an electric current.

AGENDA	KEY POINTS
1. PhET Lab	Magnets: -Magnets will always have 2 poles, North and South. Electromagnet -The current is increased by the number of batteries used in the experiment. This increases the strength of the electromagnet. -The more coils, the greater the magnetic field. -A soft iron core can be placed in the center of the electromagnet, and this strengthens the electromagnet.

Time	**Learning Activity**
60	Students will complete a PhET lab on induction where they explore a bar magnet, electromagnet pickup coil and generator. Guiding Questions 1. How does a compass needle work? 2. What general rules can you deduce about the motion of the magnet and induced current? Hint: Use the field strength meter. Does constant field strength in the coil induce a current? 3. What general rule can you deduce about changing the strength of the magnet and the induced Voltage? 4. How are magnetic fields similar/different from electric fields? 5. What general rule can you deduce about how the number of loops in the pickup coil and the induced Voltage? 6. What general rule can you deduce about how the area of the loop in the pickup coil and the induced voltage? 7. What would happen if you put a moving magnet near a pickup coil? Where does the energy come from? Where does it go?