

Phoenixville Area School District UbD Science Unit Plan

Grade Level: 7th Grade

Unit Name: Motion Stability & Forces

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Stage 1 Desired Results		
	<i>Transfer</i>	
<p>Overarching NGSS & PA</p> <p>3.2.6-8.I Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.</p> <p>3.2.6-8.J Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.</p> <p>3.2.6-8.K Conduct an investigation</p>	<p><i>Students will be able to independently use their learning to...</i></p> <ol style="list-style-type: none"> 1. Ask questions and/or define problems 2. Develop and/or use models 3. Plan and/or carry out investigations 4. Analyze and interpret data using computational thinking 5. Obtain, evaluate, and communicate information (supported by evidence) 6. Construct explanations and design solutions 	
	<i>Meaning-Making</i>	
	<p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> • Electricity is a kinetic force in which electrons move. • Electrons are negative particles. • An electric field is an area around an object that contains an electric force exerted on other objects. • The attraction or repulsion is called magnetism. • The magnetic force is a push or pull-on objects interacting with each other. 	<p>ESSENTIAL QUESTIONS <i>Students will keep considering...</i></p> <ul style="list-style-type: none"> • What is the relationship between energy and force? • How is static electricity different from current? • What causes electric fields and electric forces? • How can you change the magnetic force and potential energy between objects? • How can you detect and describe a magnetic field?
	<i>Knowledge and Skills Acquisition</i>	

<p>and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.</p> <p>Which branch(es) of science apply:</p> <p>PS</p>	<p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> • A continuous flow is called an electrical current. • The buildup of a charge on an object is static electricity. • Magnets have two ends called magnetic poles. • The area of force of a magnet is known as the magnetic field. 	<p><i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> • Identify the force, whether it is a push or pull force, the direction of force on a magnet. • Conducting investigations to determine the magnetic force on an object. • Develop practical solutions for exploring magnetic forces. • Design and incorporate technology into electromagnets. • Identify the forces of upon magnetics • Identify the forces of electricity in a natural environment. • Identify how potential energy is stored in a system. • Provide evidence that can explain two objects exerting electric forces on each other. • Model the change in magnetic forces between objects. 	
	<p>KEY VOCABULARY</p> <table border="1" style="width: 100%;"> <tr> <td> <ul style="list-style-type: none"> • Energy • Force • Motion • Electrical • Magnetic • Electromagnetic Energy • Magnets • Magnetic field </td> <td> <ul style="list-style-type: none"> • Polar • Gravitational Energy • Electron • Positive charge • Negative charge • Static electricity • Current </td> </tr> </table>		<ul style="list-style-type: none"> • Energy • Force • Motion • Electrical • Magnetic • Electromagnetic Energy • Magnets • Magnetic field
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Stage 2 – Evidence

Evaluative Criteria	<i>Assessment Evidence</i>	
Rubric	<p style="text-align: center;">PERFORMANCE TASK(S):</p> <p>1. Illustrate and explain each Law of Motion with pictures and words.</p> <ul style="list-style-type: none"> • You may draw, use images from magazines or the Internet. 	<p>Differentiation Considerations:</p> <p>Different modes of presentation – PowerPoint, poster, choice</p>

	<ul style="list-style-type: none"> • Include an explanation of how the illustration demonstrates or describes the law of motion. • Put the explanation next to the illustration. <p>2. Project should be planned out, neat, and creative.</p> <p>3. Include color and be creative</p> <p>Common Summative</p> <p>Static Electricity PhET Simulation</p> <p>Charges and Fields PhET Simulation</p>	<p>Use of notes and resources</p> <p>Chunked Assignment</p>
<p>Graded Quizzes</p> <p>Observation</p>	<p style="text-align: center;">OTHER EVIDENCE:</p> <p>Teacher Summatives:</p> <p>Magnets Lab, Force and Magnet Quiz</p> <p>Participation in hands-on labs</p> <p>Science Notebook</p> <ul style="list-style-type: none"> a. Concept maps b. Vocabulary/Glossary entries c. Guided Research d. Lab Reports described above e. Daily Journal Entries <p>Checklists of collaborative behaviors in labs and activities</p> <p>Checklists of collaborative behaviors in class discussions</p> <p>Self-assessments for Performance Tasks</p> <p>TO CONSIDER FOR LATER: UNIT TEST(S)</p> <p>Class Participation</p>	<p>Differentiation Considerations:</p> <p style="text-align: center;">Adapted Quizzes</p> <p>Homogeneously grouped labs to allow for teacher support</p> <p>Notes/Resources available for more exposure</p> <p>Pictures to support vocabulary</p>

