

**Connecting to the *Next Generation Science Standards* (NGSS Lead States 2013)**

<p><b>Standard</b></p> <p>MS-PS2-5: Motion and Stability: Forces and Interactions  <a href="https://www.nextgenscience.org/pe/ms-ps2-5-motion-and-stability-forces-and-interactions">https://www.nextgenscience.org/pe/ms-ps2-5-motion-and-stability-forces-and-interactions</a></p> <p>The chart below makes one set of connections between the instruction outlined in this article and the <i>NGSS</i>. Other valid connections are likely; however, space restrictions prevent us from listing all possibilities.</p>	
<p><b>Performance Expectation</b></p> <p><b>MS-PS2-5:</b> Conduct an investigation 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>	
<b>Dimension</b>	<b>Classroom Connections</b>
<p><b>Science and Engineering Practice</b>                  Developing and Using Models</p>	Students will construct, test, revise, evaluate, and use visual models to describe magnetic forces between objects.
<p><b>Disciplinary Core Idea</b>                  PS2.B: Types of Interactions</p> <ul style="list-style-type: none"> <li>• Electric and magnetic (electromagnetic) forces can be attractive or repulsive, and their sizes depend on the magnitudes of the charges, currents, or magnetic strengths involved and on the distances between the interacting objects.</li> <li>• Forces that act at a distance (electric, magnetic, and gravitational) can be explained by fields that extend through space and can be mapped by their effect on a test object (a charged object, or a ball, respectively).</li> </ul>	Students explore eight stations in which they investigate the effects of magnetic forces and magnetic fields on magnetic and nonmagnetic objects. Intended observations include attractive and repulsive forces, ability to be magnetized, and the effects of distance, and the behavior of test items in the field.
<p><b>Crosscutting Concept</b>                  Cause and Effect</p>	Students generate causal explanations for magnetism.