

Magnetic Force

SD Science Content Standards:

- 1.P.2.1. Students are able to describe relative positions of objects.
- 2.P.2.2. Students are able to predict the effects of magnets on other magnets and other objects.
- 4.P.3.3 Students are able to use magnets, electromagnets, magnetic fields, and compasses to explore magnetic energy.

Materials:

Magnets Kit – borrow from ESA2 Lending Library

Magnetic Field Toy – borrow from ESA2 Lending Library (2 available)

Globe

Lesson Plan:

1. North and South Pole
 - a. Demonstrate using a model of the Earth
 - i. Earth's tilt on an axis
 - ii. Show compasses and what they do. Allow for wondering and questioning.
 - iii. Ask: Why does a compass point north?
 1. Discuss the giant compass in the Earth
 2. Show what happens when a man made magnet goes near a compass and discuss
 - iv. Frayer model: define **north and south pole** the two ends of a magnet; opposite poles attract and like poles repel each other; the northern most and southern most points on the axis of the Earth
 - v. Frayer model: define **magnet** A magnet is an object or material that attracts certain metals, such as iron, nickel and cobalt.
2. Magnetic Field
 - a. Show the magnetic field toy
 - b. Point out that the bar magnets have a north and south pole just like the earth has a north and south pole.
 - i. Ask: What do you think the Earth's giant magnet does for the Earth?
 - ii. Earth's magnetic field acts like a shield to the supersonic solar wind. Over 98% of the charged particles from the Sun and from galactic cosmic rays that strike Earth's magnetosphere are deflected by it!
 - iii. Frayer model: define **magnetic field** (region around a magnet where it repels or is attracted to magnetic materials)
3. Magnetic items
 - a. Students predict which items are magnetic and which are not using chart
 - b. Test the items with magnets