MAGNETISM LEARNING MODULE -

*Learning Target: Students will understand basic properties of magnets and relate the magnetic field concept to Earth.*

* Begin by finding a partner to work with on the experiment.
* Acquire the materials for this lab which are:

-bar magnets -compass -wire -battery -section of string

* Begin with another group to share your magnets. Bring two north poles together. What happens?
* Bring a north and a south pole together. What happens?
* Why do you think this is happening?
* **What causes magnetism?(**look this up on the internet)

*Explore*

1. Take your magnet and find three things in the room that it is attracted to. List those objects below. **Do both poles attract to the objects? Why?**
2. Now find three things that are not attracted to the magnet. List below.
3. Why do you think some objects interact with the magnet and others do not?
4. Next fold a piece of aluminum foil into a bar. Does the aluminum interact with the magnet?
5. **When you have reached this point have Hollow check your work and come up to see the magnetic field demo.**
6. Sketch the magnetic field that you observed.
7. Next take a compass and move it near the bar magnet. Record your observations below. Explain what you think is happening. Use the term magnetic field lines.
8. Earth is basically just a giant bar magnet. Sketch a picture of Earth below. Based on your observations from the previous step and the fact that a compass is a small bar magnet which is free to spin and the north pole of that magnet points north, what magnetic pole is at geographic north? Sketch the magnetic poles on your Earth. Next sketch your field lines. The arrows on the field lines should go from North to south. Look on the internet to get an idea what the field looks like for Earth.
9. Now take your bar magnet and suspend it with a string from a sink. Record your observations below and explain.
10. Now take the wire and connect the two terminals of the battery. You have just produced an electric current. Bring your compass near the wire. Record your observations below and attempt to explain what is happening.

*Questions:*

1. What is responsible for generating Earth’s magnetic field?
2. Why is the magnetic field important?
3. How does the magnetic field relate to Northern Lights?