

Magnetism and Electricity

LT: Identify the relationship between the magnetic field & electricity.

- pages 238-241 - write caption - how magnets generate electricity

- What is a magnet attracted to? (By itself?)

- Attracted to metal
- NOT attracted to aluminum/tin foil
- Not to wood
- Not to fire
- Its not attracted to our hands
- When it is attracted to something the pull gets stronger

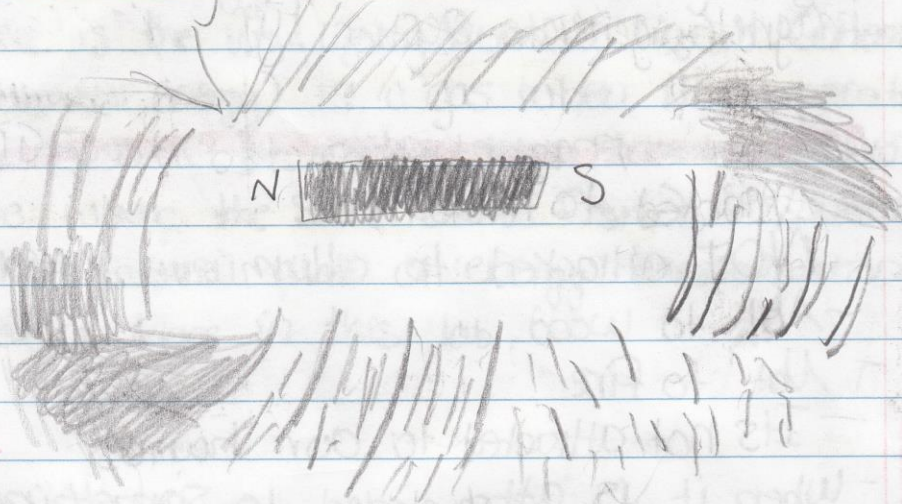
Together

- They get together
- The pull is super strong on one side, but pushes - it's super strong when you flip one over
- The ends won't go together when one side is flipped
- When you put opposite sides, one side flips
- Sticks on some chalkboards
- Magnetic field
- Capable of going through objects
- Invisibile

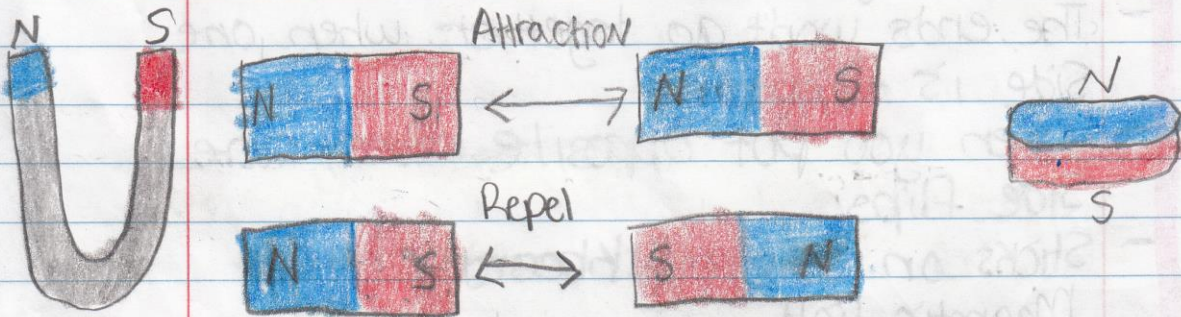
Observations

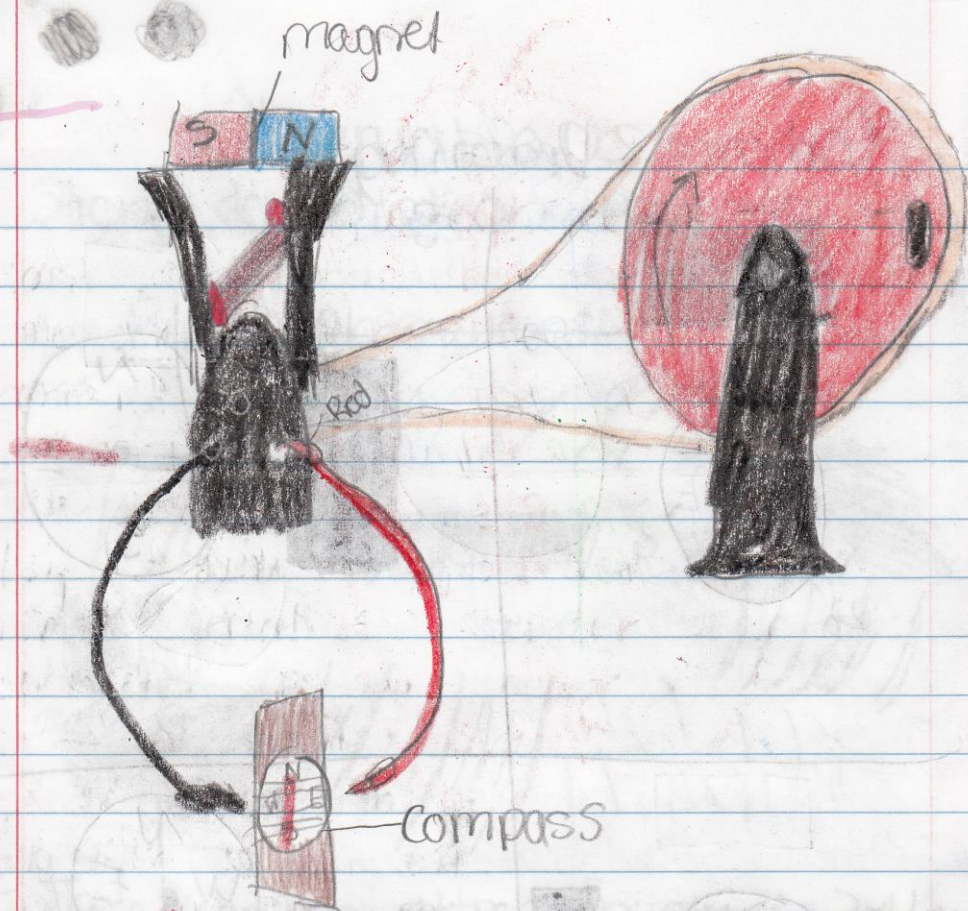
- Strong depending on magnet

~~Field~~ Observations

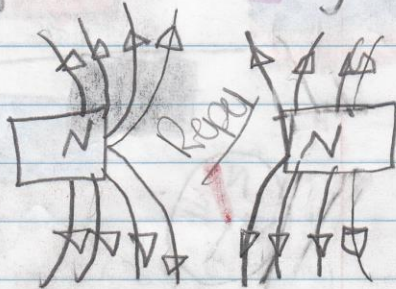
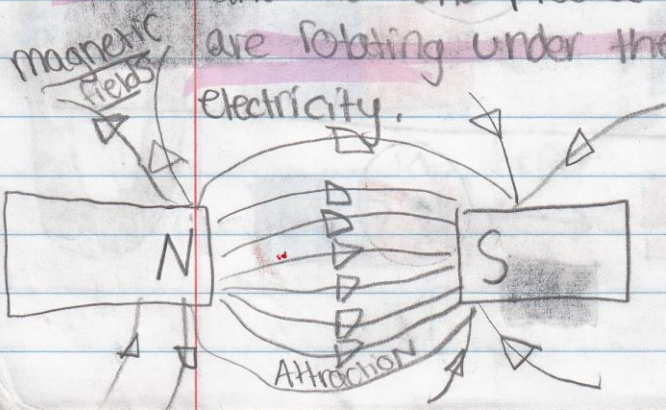


- There was no attraction about 2-4cm away from the magnet
- This shows the magnetic field of the magnet
- The magnetic field is strongest close to another magnet

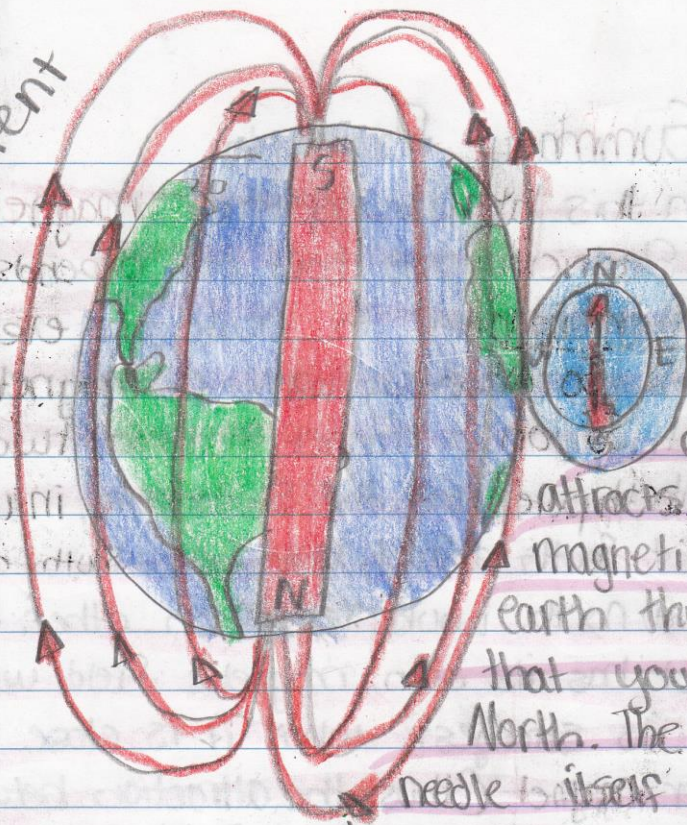




- This acts like a generator because when you turn the handle it produces electricity
- Uses electromagnetic induction in order to transfer the mechanical energy into electrical energy
- When the handle rotates it spins the coils and the coils produce a current while they are rotating under the magnet thus creating electricity.



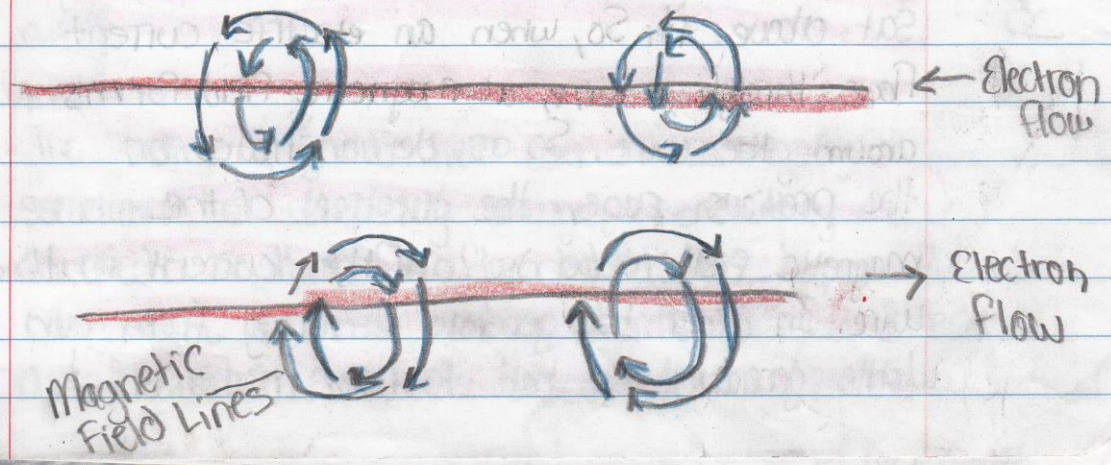
Producing Electric Current



Since opposites attracts the magnetic arrow of the compass attracts to the South magnetic field of the earth thus telling you that you're going North. The compass needle itself is a mini bar magnet with a North & South pole, that's why it attracts

Electricity & Magnetism

When an electric current flows through a wire, a magnetic field forms around the wire. The direction of the magnetic field depends on the current in the wire



Summary Paragraph

In this lab, we explored magnetism and Electricity and how one depends on the other in order to create an electrical current. So obviously with a magnet opposites attract. So on a magnet there are two poles - the North pole and the South pole in which North & South attract, but South & South or North & North would repel each other. Each magnet has its own magnetic field which is at its strongest when it is close to another magnet (thus the attraction between two magnets or the repelling). We tested this with the iron filings, and there is no attraction within 2-4 cm of the magnet and then after that there was a bunch of filings showing where the magnetic field starts, which is produced by moving electric charges. So now when we spun the handle on the generator it spun the wires, as the magnet sat above it. So, when an electric current flows through a wire, a magnetic field forms around the wire. So as demonstrated on the previous page, the direction of the magnetic field depends on the current in the wire. In order to generate electricity from our little generator, we had to use mechanical ϵ .

kinetic energy to turn the handle to the generator. In order to turn the mechanical energy into electric energy the generator used electromagnetic induction, which is the production of voltage across a conductor moving through a magnetic field. So when the handle is cranked that spins the coils which have the magnetic field running through them (as explained earlier). So, the coils produce that electrical current which is transferred to the compass to move the arrow, which is how you get an electrical current from magnetism.

Compasses also use magnetism in order to function because of earth's magnetic poles. The earth is like a big bar magnet & the little arrow on the compass is like a mini bar magnet. So opposites attract so when you are heading north your compass arrow attracts to the earth's south magnetic pole - telling you that you are headed north.

The earth's magnetic field can move slightly sometimes or completely change where they are located - so they flip flop. When this happens it can cause a lot of radio static. Overall these are the main subjects discussed in the lab.