**Electromagnets**

Today in Science class Mr. Smith did two demonstrations.

In the first one, he created a circuit using copper wire and some batteries. When he put a compass near it, the electricity flowing through it made the compass turn toward the copper wire. This was because the electricity flowing through it gave it a magnetic field.

In the second one, he made an electric motor with an electromagnet and pushed it around using a magnet. The polarity of the electromagnet changed every half a turn. The electromagnet was on a little bar, so that if you held a magnet near the elctromagnet it would spin really fast, and since it switched polarity every half turn, one end would be repelled by the magnet and the other end would be attracted. Then once one end to the magnet, the polarity would reverse and that end would be repelled and the other attracted, etc.

Things I learned:

* Hans Christian Örsted was a Danish scientist/science teacher who discovered that a magnetic field surrounds wire with electric current flowing through it.
* It was an accidental discovery.
* It was because he hadn’t cleaned up after his magnetism unit.
* All magnets were made out of rock at the time.
* They didn't know how to make them.
* They only had magnets that they found.
* The only electricity that they had at the time was from metal batteries, which they knew how to make.
* You can make an electromagnet by placing a piece of iron inside a coil of wire with electricity running through it.
* As soon as you take the iron out of the coil of wire, its magnetic field collapses.

**ELECTROMAGNETS**

**Same as Permenant Magnets** **Different from Permanent Magnets**

|  |  |
| --- | --- |
| Has a North and South Pole | Can Turn On and Off |
| Has a Magnetic Field | Can Change its Polarity |

* You can make a very strong electromagnet with a very small amount of electricity.
* There are electromagnets strong enough to pick up trains.
* There are three things you need for an electric motor:
  + An electromagnet.
  + Some other magnet.
  + Electric current.

