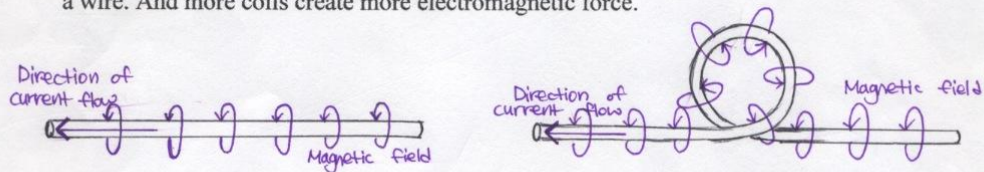


## Hopping Frog

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Electricity is the flow of electric charges or electrical power. Today, electricity is one of the most familiar science subjects. Look around you for a second. You must be surrounded by all those things run by electricity. If we don't have electricity, we must lose all our best friends; computer, cell phone, television, and even lights! We all know that. But, did you know that we can create a magnet out of a piece of iron, coil and battery? It's called an electromagnet. The most fundamental type of electromagnet is a simple segment of wire. Magnetic fields caused by wire follow a form of the Fleming's left-hand rule. We used coil instead of wire because when you make a coil, the magnetic fields gather on the center of the coil; this means a coil creates more magnetic force than a wire. And more coils create more electromagnetic force.

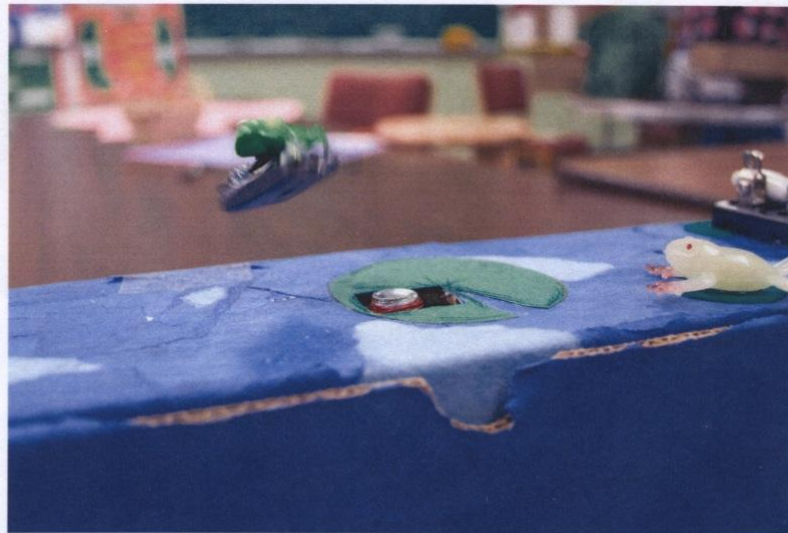


We used an electromagnet and made a hopping frog.

To make a hopping frog toy, the first thing you need is; one iron bolt, 4 D-cell batteries, an insulated copper wire, scissors, tape, magnet, switch, alligator wire, any kind of box (but big enough to put the machine in), and a toy frog (or any kind of hopping animal toy, better if it's light). Step 2; Remove some insulation. Some of the copper wire needs to be exposed so that the battery can make a good electrical connection. Use scissors or sandpaper to remove a few centimeters of insulation from each end of the



In these two pictures we captured the like charges of the magnets repelling from each other which causes the magnet, and frog, to jump.



In these pictures we were capturing the voltage and charge that was being measured in the electromagnetism in our frog jumping machine





After many tries we finally came up with the idea of A Hoping Frog game.

It took much persuasion when it comes to the wires and batteries, and after switching around many magnets we finally succeeded in our project. We had to keep on reciting our hypothesis because our project kept on changing. Now we really know the basics from experimenting, since it was hands on. If we were ever to do this again it would come out easier, and we would be able to go farther. If we could go any further with the project we would try stronger magnets, better batteries, and eventually a heavier object to jump. This way we could keep the investigation of the project going. One question that we have is, how the coils affect the magnetism? How come the layering of the coils affects the strength of the magnetism?