

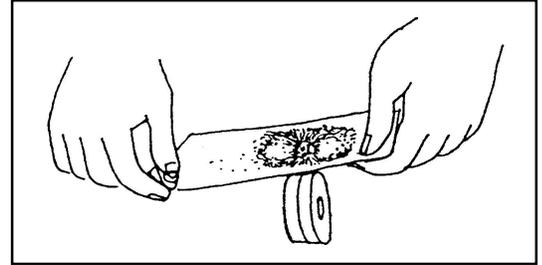
Name of the Expert: Dinesh S Nisang, Sunday Science School

Name of the activity: **Understand electromagnetism and make Simple DC motor**

### **Experiment 1: Explore Lines of Magnetic Force using iron filings**

Iron filings form some specific patterns when you sprinkle them around a magnet. Let us try this out with our ring magnets.

1. Take two magnets together. Keep them on their edge.
2. Hold a card sheet just above these rings. The card sheet should touch these magnets gently.
3. Sprinkle iron filings on the card sheet gently and shake your hand which is holding the card sheet very slowly.
4. You will find that the filings get a specific pattern. This is due to magnetic field of the magnets.



### **Experiment 2: Make an Electro magnet**

Use copper wire from the kit.

remove enamel coating of its ends using cutter or blade.

Give several turns of this wire around safety pin from the kit.

Join two ends of this wire to 1.5 V cell given in the kit.

This becomes electromagnet. You can test is using pins and other magnetic material.

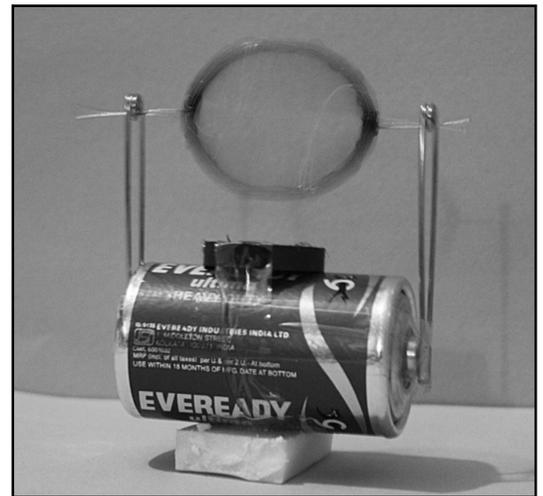
### **Expt No.3: Simple DC motor**

**Objective of the activity:** To make a simple electric motor using household material & demonstrate conversion of electrical energy to mechanical energy.

**Material required:** Battery (1), Ring magnet (1), Safety pin (2), Cello tape, Insulated copper wire

#### **Procedure:**

1. Take insulated copper wire, to make armature round, wind copper wire around the battery 12 times.
2. Gently take it out & twist both free ends & wrap them around the coil exactly 180 degree apart.
3. Remove the enamel of the one end of the copper wire with sharp cutter fully & 75% (3 sides of the wire) of the second end.
4. Stick 2 safety pins to the both terminals (positive & negative) of the battery with the help of cello tape.
5. Fix ring magnet on to the centre of the battery in between 2 safety pins.
6. Put round armature in to the holes of the safety pins; make sure it doesn't touch the magnet. Two ends of armature, from where the enamel coating is removed, must rest in the holes of safety pins.
7. If your motor doesn't start immediately, try giving it a start by spinning the coil.



**Learning outcome:** Students understands laws and properties of magnets. Concept of working of motor.