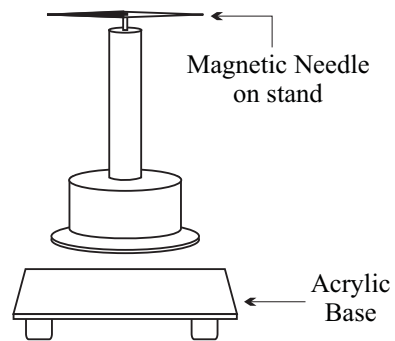
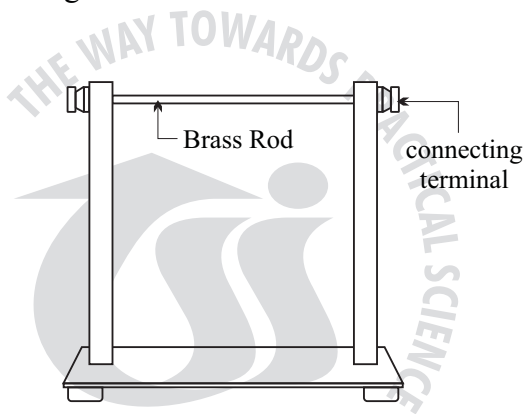


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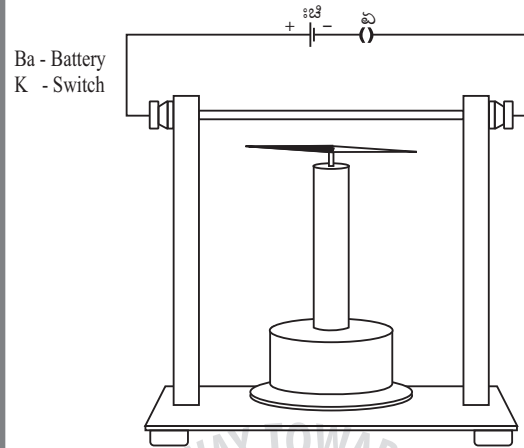
## Magnetic field around a current carrying straight conductor :

### Assembly :

Consists of brass rod. The rod is supported on a clear plastic frame. The ends of the rod are provided with connecting terminals which can be used for wire connection. The model comes with a magnetic needle on stand & small acrylic base to place magnetic needle above the brass rod.

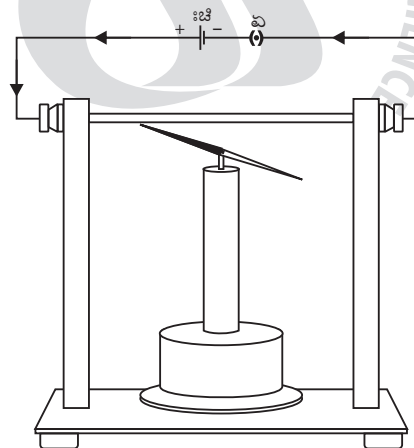


### To do and observe

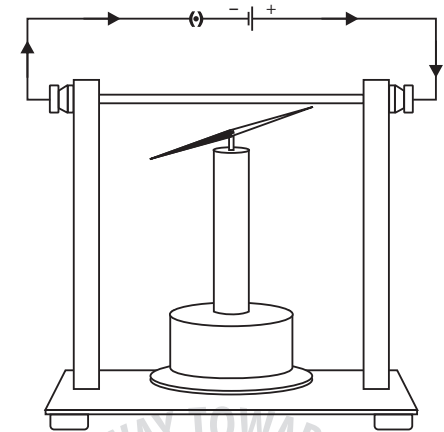


Apparatus with electrical connections.  
(Rod is parallel to the needle)

### When the needle is placed below the current carrying conductor

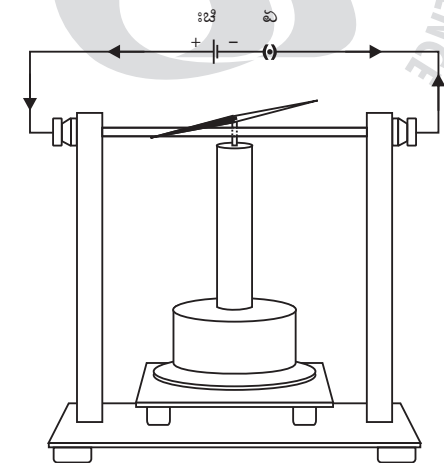


Step - 1 : Observe the deflection of the needle when current is passed through the rod



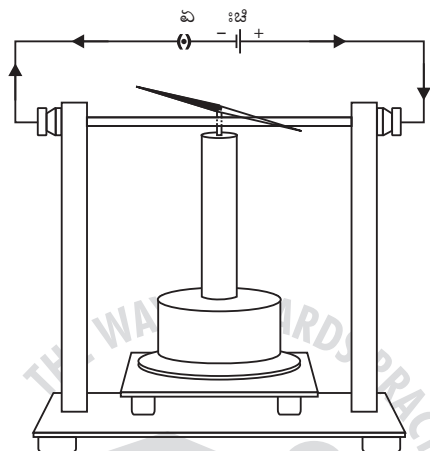
Step - 2 : Observe the deflection by reversing the current through the rod by reversing battery polarity

### When the needle is placed above the current carrying conductor



Step - 1 : Observe the deflection of the needle when current is passed through the rod





Step - 2 : Observe the deflection by reversing the current through the rod

### ***What is going on?***

Initially when (needle is below the conductor) you pass current through the rod, note the direction of current. Magnetic field is produced around the rod as per right hand thumb rule. This field makes the needle to deflect in one direction. Note the direction of the deflection. When the current through the rod is reversed, the direction of the magnetic field produced is also reversed. As a result of it the needle get deflected in opposite direction.

When you pass the current through the rod by placing needle above the rod, the nature of deflections are reversed compared to the first part of the experiment.



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### ***Follow Up:***

Repeat the experiment by increasing the strength of current through the rod.  
Perform the experiment by placing the compass needle perpendicular to the rod. What you observe? Why?

### ***Application :***

The observation that electric current can setup a magnetic field has led to some of the most fruitful achievements in the areas of industrial and technical developments. These days we can manufacture magnets which are used in variety of ways. They are used in radio and all speakers, in refrigerator doors to snap them close. They are used on video and audio cassette tapes, on hard discs and floppies for computers and in children toys. In medicine the magnetic resonance imaging (MRI) scanners expose the inner bodies of the patients for examination by medical doctors in much more detail today than was possible earlier.



Hans Christian Oersted



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