



Achievements and Competencies

Learning Outcomes

| |
|---------------------|
| Grades 10-12 |
| Fields |

Achievements and Competencies are based on the Common Framework of Science Learning Outcomes (K-12) set by the Canadian Council of Ministers of Education (1997).

Specific Expectations

Grade 11 & 12

PHYSICS

Fields

116-7 Analyze natural and technological systems to interpret and explain their structure and dynamics (e.g., analyze systems such as motors and generators, battery-charging systems in cars, photocopiers, and electrostatic air cleaners)

Setting up the generator allows the students to understand and explain its structure.

328-1 Describe gravitational, electric, and magnetic fields as regions of space that affect mass and charge.

In this activity, students see that magnets create magnetic fields. If a magnet is moved in the path of another magnetic material that was not near it before, the magnets will be attracted to each other. A change in magnetic field in the presence of a wire coil can also produce an electric current, as the marble generator project will demonstrate.

328-2 Describe gravitational, electric, and magnetic fields by illustrating the source and directions of the lines of force.

In this activity, students identify the source of the magnetic field as the magnet moving through the coiled wire.

328-3 Describe electric fields in terms of like and unlike charges, and magnetic fields in terms of poles.

In this activity, students observe that charge moves because it wants to find the lowest electric potential, the same way that water flows downhill: the water, like a charge in a circuit trying to find the lowest electric potential, is trying to find the lowest gravitational potential.

328-6 Describe the magnetic field produced by current in both a solenoid and a long, straight conductor

In this activity, students see that a current is produced by moving the magnet through a wire coil. This current will be visible when it lights up the LED.