

## Electricity & Magnetism

# Running Bug

### A STEM challenge

#### Background

This is a nice STEM challenge for students to do. They can design their own 'bug' and the best design wins. Nice example for conversion of energy.

#### You will need...

- ✓ Nail brush (or similar),
- ✓ motor & motor holder
- ✓ 2 × 1.5 AA batteries & battery holder
- ✓ wire
- ✓ solder & soldering iron (or wires and crocodile clips)
- ✓ some form of metal to cause an imbalance on the motor  
(A fuse holder from a mains plug works very well as you can screw it tightly onto the motor axle).

#### Follow these steps

1. Glue the motor clip to brush.
2. Place the motor in the clip.
3. Screw the fuse holder onto the motor.
4. Attach the motor to the batteries using solder or other means.
5. Switch on and place on the ground.
6. Observe what happens.

#### So what happened?

When the motor is turned on the eccentric weight attached to the axle causes the motor to vibrate. This causes the brush to move around rapidly.

#### What next?

1. Change the size of the brush.
2. With the aid of a hair dryer, bend the bristles slightly backwards and see what happens.

