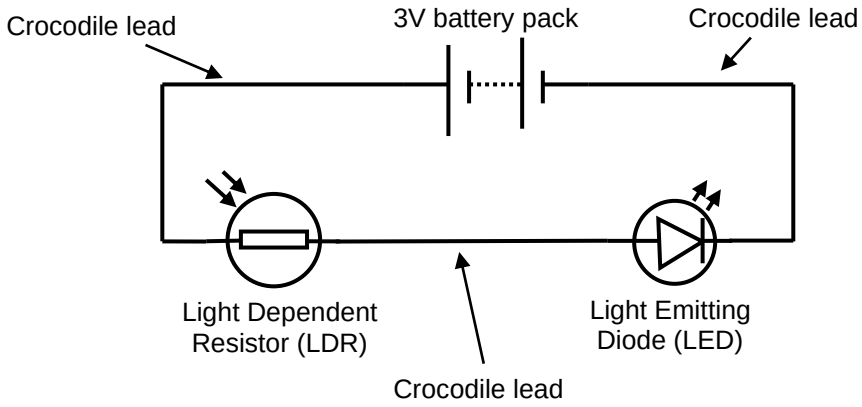
Engineering Apprenticeship

1. Using the equipment in the box on your table, set up the circuit below. All your team members must be involved.



Tips:

- The LDR must be connected to the positive terminal of the battery.
- The longer leg of the LED must be connected next in the circuit to the LDR.

2. Your LED should light up. (If it does not try shining a torch on to the LDR.)

3. Hold your hand over the Light Dependent Resistor (LDR) and watch what happens to the Light Emitting Diode (LED).

IMPORTANT: An LDR will only work with the LEDs or a piezo buzzer. It will NOT work with a 2.5V Bulb or a motor.

How it works.

When a circuit is connected electrical current flows around it due to the movement of electrons. How quickly or slowly this happens is affected by the **RESISTANCE** in the circuit.

We can change resistance in a number of ways including:

1. **changing the type of material in a circuit**. Some materials are good conductors and some are poor or do not conduct electricity at all.
2. **changing the length of the conductor.** Longer wires have greater resistance than shorter wires.
3. **changing the temperature of the conductor.** For example, the resistance of a filament in a light bulb increases as it heats up.

The resistance of LDRs decreases as the light intensity increases. We can use this to make things such as movement sensors which turn a light off when someone or something is moved away from the LDR. You will need to think about resistance when making any circuit to be included in your product.