LESSON PLAN 1: Super Fruity Loops!

USING A FRUIT BATTERY TO POWER A WATCH. FOR USE WITH THE FRUIT-POWERED WATCH KIT

LEARNING OBJECTIVES:

1. To construct circuits incorporating a battery or power supply and a range of switches, to make electrical devices function (e.g. buzzer, motor, LCD watch).
2. To understand that changing the number or type of components in a series circuit can make bulbs brighter or dimmer.
3. To represent series circuits by drawings/diagrams and conventional symbols, and to construct them using such drawings and diagrams as a basis.

YOU WILL NEED:

Fruit-powered Watch Kit. Fruit to use as a battery. Class activity sheets. If you plan to build actual circuits, enough sets of class activity materials (set: wires, battery, bulb, switches, coin, copper, string, magnet, paper). Copper wire and small light bulbs for home activity. Copper wire can be purchased from DIY stores or online **(e.g.: http://www.maplin.co.uk /free _uk_delivery/Tinned_Copper_ Wire_45/Tinned_ Copper_Wire_45.htm)**

INTRODUCTION:

- Explain why it is important to find alternative and renewable sources of energy (conventional sources are running out and polluting the atmosphere).
- Elicit the children's previous knowledge about circuits. Ask them what basic equipment you would need to power a light bulb.
- Explain that you are going to use fruit instead of a battery to power a watch.

MAIN EXPERIMENT:

- Explain the circuit to the children (but not how the fruit works). Connect the circuit and show the watch working.
- Get the children to talk in groups about why they think the watch worked, and feedback their ideas.
- Explain that the fruit is acting like a battery: inside a battery, an acidic solution acts as an electrolyte allowing electric current to pass between two different kinds of metal. The fruit contains citric acid which acts as the electrolyte. Once the circuit is connected, the current passes through the fruit and powers the watch.
- Watch a demonstration on *You Tube* by Andrew Hsu showing and explaining a lemon battery experiment: **http://uk.youtube.com/watch?v=040jixaMs68**

INDEPENDENT TASK:

- Explain the **Super loops!** activity to the children and get them to design circuits and draw them on the activity sheets.
- If possible, give them the necessary materials to test their designs in reality, so they can experience hands-on which materials work best.

PLENARY:

- Ask the children to feedback their findings.
- Discuss how someone on a desert island might use the fruit-power concept to power devices to help them survive.

HOME ACTIVITY:

- Explain the **Fruity loops!** homework, a fruit battery experiment. You will need to lend them small light bulbs and copper wire to make their circuits at home. Make sure they understand that they should work with a parent/guardian.

LEARN MORE ABOUT CLIMATE CHANGE & RENEWABLES BY VISITING:

http://www.wwf.org.uk/climatechange/climate_main.asp
http://www.guardian.co.uk/environment/energy

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