

Digicrafters

Lesson Plan – Red Kit

Brief description

Students complete 3 simple conductivity projects using a Makey Makey board. The results of the final project are used to classify a range of materials as conductors or insulators.

- **Duration:** 3 x 30 min activities
- **Key Stage:** 3
- **Year level:** Early Secondary
- **Topics:** Energy & Change, Electricity, Circuits, Conductors and Insulators, Classifying, Input and Output, Resistance
- **Preparation:** 10 minutes – Provide a Red Kit and a selection of fruit for each small group, and set up a demo bleating banana
- **Extensions:** Research the history of computer input devices and methods
- **Art / Science / Technology:** Design, build and decorate a game handset for use with the Makey Makey

Activity 1 – Bleating Binary Bananas!

Whole class Introduce Activity 1 (5 - 10 min):

Demonstrate the bleating banana in action on <http://www.digicrafters.co.uk/sheep/>.

Use a computer keyboard – press keys and explain the signal. Show Makey Makey. Attach wires to create a simple circuit (5 min). Touch two wires together to create keypress input (demonstrate in Word/Notepad). Direct students to the Digicrafters Project Page for Red Kit Activity 1 – Bleating Binary Bananas!

Small groups Activity 1 (10 min): Use the Makey Makey to create a Banana button. This will replicate a click on <http://www.digicrafters.co.uk/sheep/>.

Whole Class Discussion (5 – 10 min): Discuss the Bleating Binary Bananas activity

Activity 2 – A Very Fruity Piano

Whole class Introduce Activity 2 (5 - 10 min):

Attach wires to create two circuits on the Makey Makey. Complete each circuit in turn to demonstrate two keypress inputs (demonstrate in Word/Notepad). Direct students to the Digicrafters Project Page for Red Kit Activity 2 – A Very Fruity Piano.

Small groups Activity 2 (10-15 min): Use the Makey Makey to create a fruit piano. Each “key” (piece of fruit/veg) replicates a keypress on <http://www.digicrafters.co.uk/piano/>.

Whole Class Discussion (5 min): Discuss the Very Fruity Piano activity.

Activity 3 – Conductive Catch’Em All

Whole class Introduce Activity 3 (5 min):

Small groups Activity 3 (15-20 min): Make a Conductivity Tester. Collect materials to test with the Makey Makey (eg skin, hair, seaweed, plastic, water, coins, clothes, conductive gloves, conductive tape etc etc)

Replicate different keys using alternative serial circuits. Use the sheep or piano pages with your circuits, to test and classify materials.

Whole class Discuss Activity 3 (5-10 min): Discuss the Conductive Catch’Em All. Introduce concept of resistance, and emphasise conductivity as a scale, not a binary property.

Planning for safety

The low voltage Makey Makey board is powered over USB and is earthed. All materials in this lesson are safe to touch and cannot draw large currents or reach hazardous temperatures. The conductive tape has sharp edges and should be handled with care to avoid injury. Crocodile clips should be used on the ends of wires to avoid wire splinters. The risks associated with this lesson are easily managed by implementing a few simple safety precautions and behaviour rules. You should always consider the individual circumstances of your classroom and discuss concerns with your health and safety representative or science coordinator.

Materials and equipment

- Red Kit
- Digicrafters website
- Assorted fruit/vegetables

Potential materials for conductivity testing

Wooden pencil

Plastic pen

Assorted fruit/vegetables

Paper

Hair/Skin

Coins

Conductive Tape

Conductive Gloves

Various Clothing