Electric art

Creating a piece of artwork that has a working electronic circuit will really 'light up' this activity...

You will need (per artwork)

- a thin piece of A4 card
- pencils, colouring pencils, crayons, felt tips
- old newspapers or magazines
- glue stick
- scissors (supervise young people and store all sharp objects securely, out of the reach of young people)
- cocktail sticks
- flashing LED capable of working with a supply of approximately 5V
- soldering iron and solder (optional)
- electrical tape
- safety glasses if using soldering iron
- 3 x AA batteries (1.5V each)
- 3-AA battery holder with red and black flying leads
- on/off switch (optional) eg a toggle or slide switch

Instructions

1 Let your group know that they're going to create pieces of art that have an electronic circuit built into the design. Ask them to bring in old newspapers, magazines and pictures of favourite cartoon characters, films, bands, pets or sports stars to create a collage. Alternatively, they can draw their own pictures or copy a famous piece of art.

2 Encourage them to think creatively about where they could position a flashing LED within their artwork, to make it look as interesting as possible. It could be a flashing eye or nose, a football going into the net, a star or planet in the night sky, or the centre of a flower.

3 Split everyone into groups or pairs. Ask the young people to create their artwork on their pieces of A4 card.

4 Once the artwork's complete, support them to add the flashing LED. Using a cocktail stick, they need to carefully make two small holes where they want the LED to go (one for each leg) then push the legs through the holes. Ensure the legs don't touch each other, as this could cause a short circuit!

5 Next, the flying leads from the battery holder should be connected to the LED. A soldering iron is the best way. Be very careful using soldering irons. Read the safety information at the bottom of this page. Firstly, twist the exposed end of the red flying lead around the long leg of the LED. Place the heated soldering iron tip on this point and apply solder until the joint is made. Alternatively, without a soldering iron, once twisted the flying leads can be joined to each LED leg by tightly wrapping each twisted joint with electrical tape. Repeat the process for the black flying lead and short leg of the LED.

6 Ask the young people to put the 3 AA batteries into the battery holder, ensuring that the positive (+) and negative (-) sides of each battery line up with the positive and negative connections marked on the holder. The LED should then start to flash!

7 To make the activity more challenging, an on/off switch could be added to the circuit, or even an additional flashing LED. The emphasis is on creativity – what artwork could you produce that incorporates the flashing LED for extra visual effect or interest? Tape can also be used to stick the battery pack and LED to the back of the artwork to hold them in place.

8 Take pictures or videos of the final artworks and share them with other groups on social media to inspire others.

Time needed
60 minutes

Badge

IET partners the Scout Electronics Activity Badge

Partner

IET The Institution of Engineering and Technology

Outcomes
The aim of this activity is to make a piece of artwork that has a working electronic circuit, adding interest to the final piece. The young people will be challenged to get creative by incorporating art with electronics.

More information
For more badge resources and activities visit **scouts.org.uk/supporters/iet/**.

Safety first: soldering
Soldering irons produce a lot of heat. Never touch the tip of the soldering iron on anything other than the things you're soldering and use tweezers or clamps to hold things in place. Never solder near flammable gases or liquids or combustible materials such as wood, textiles, or paper. Make sure there's a fire extinguisher and a first aid kit (with items to treat burns) nearby. Wear non-flammable clothing, gloves, safety goggles, and closed-toe shoes. Cover your arms and legs to prevent burns and remove loose clothing (such as scarves). Work in a well-ventilated area to avoid inhaling fumes and keep food and drink away from the working area to avoid contamination.

Photos: Getty Images