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| **Workshop : Light bulbs and Circuits****National Curriculum Links**KS2 Science: yr 4 + 6 Electricity * construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
* recognise some common conductors and insulators, and associate metals with being good conductors
* use recognised symbols when representing a simple circuit in a diagram
* Pupils will work scientifically by: observing patterns such as bulbs get brighter if more cells are added and cucumbers and humans are conductors because they water and building simple useful circuits

KS2 History: Investigating Local HistoryKS2 DT: understand and use electrical systems in products  |
| **Learning objectives** | **Session structure** | **Assessment for learning** |
| **To explore the events leading up to Joseph Swans invention of the Lightbulb in 1880.****To investigate the components and connections needs to build a circuit****To discover which materials are conductors and which are insulators****To construct simple series circuits and make observations and predictions about the results of changing components e.g. adding extra lightbulbs to the circuit****To understand standard circuit diagrams and symbols****To create a simple useful electrical system**  | **Introduction**We will explore the life of Joseph Swan and his invention of the Lightbulb using archival images. We will investigate key locations, people and events of the inventions. **Session activities**As a class we will create a human circuit to investigate the components needed to build a successful circuit. We will think about the use of switches and how we can turn circuits off and on using a switch. We will make predictions about whether materials will be conductors or insulators and carry out an experiment to see if we are correct. Students will work in small groups to complete a series of simple circuit building challenges to prepare them for creating their own circuits. Each student will then follow instructions to create their own simple torch circuit to take away using copper tape, LED bulbs and cells. **Plenary**At the end of the session students will have the opportunity to experiment with circuit kits to build a range of useful electrical systems to build on the knowledge covered during the session.  | Children will explore themes through class and group experiments, we will ask questions throughout to check understanding.Children will have opportunities to respond and give feedback throughout the session. There will be opportunities for Q&A at the end of the session.  |
| **Before your visit** | **After your visit** | **Key vocabulary** |
| Make a free teacher pre visit to familiarise yourself with the site- contact learning@discoverymuseum.org.uk Explore the museum virtually using goggle institute:<https://artsandculture.google.com/partner/discovery-museum>  | * Ask your students can draw a circuit diagram for the torch created during the session
* Write instructions to explain how to build a paper torch
 | Circuit, wire, bulb, cell, switch, conductor, insulator, dimmer, brighter |