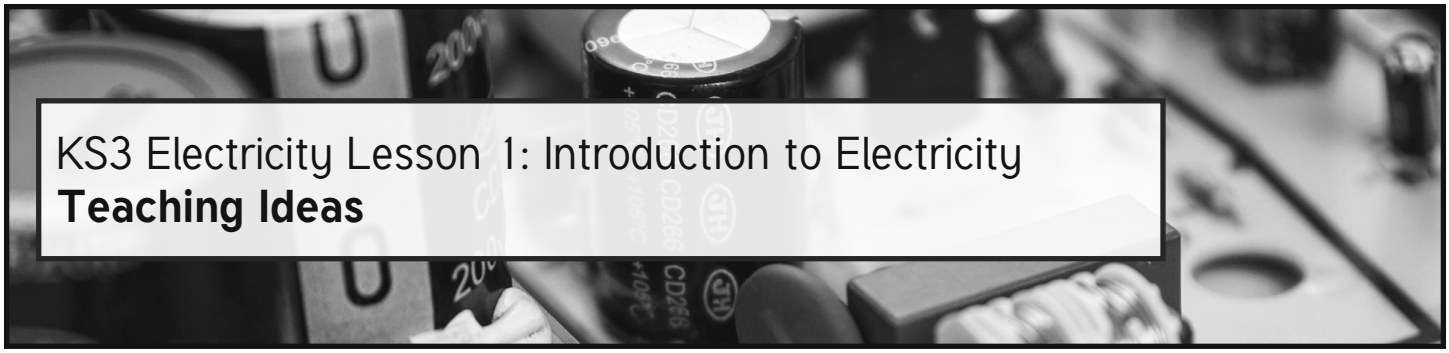

KS3 Electricity Lesson 1: Introduction to Electricity
Teaching Ideas

Learning Objective:	To understand why some circuits fail to work.
Success Criteria:	• To identify the symbols used to represent components in a circuit. • To describe why some circuits do not work. • To apply our knowledge of circuits to an exam question.
Context:	This is lesson 1 in a series of lessons that covers the topic of KS3 electricity with a focus on an introduction to electricity. You can teach this lesson as a stand-alone lesson or use it to form the wider unit of work on the introduction of electricity. The choice is yours!

Starter

Symbols

Every day we see lots of different symbols. What are these symbols and what do they represent?

Students are presented with lots of different logos ranging from social media to well-known brands. The idea is for students to realise that logos can represent different companies, just as circuit symbols can represent different components.

Main Activities

What Are Circuit Symbols?

Use this section to introduce to students the idea of circuit symbols. Electrical circuits are often represented by circuit diagrams. Rather than spending lots of time creating very artistic drawings of circuits, we use standard symbols that are much simpler, easier to draw and easier to interpret. The symbols represent components such as a bulb, ammeter and voltmeter that can be used in a circuit diagram. Circuits can be drawn in series where one component comes after the other or in parallel.

Find a Friend

After you have introduced the idea of circuit symbols to students, you may choose to introduce the find a friend activity. This activity is great to consolidate learning and encourages students to talk to their peers. This activity can also be used to gauge students' understanding of the work they may have covered in primary school.

There are three types of card:

orange – name

blue – symbol

green – description

Give each student in the class one of the cards. This can be random or differentiated by giving easier cards to lower-ability students and more challenging cards to higher-ability students. Unused cards can be put on a table for students to go to if they can't find their 'friends'. Where there are more students than cards, give one card to a pair of students. Students should then move around the room and find their two 'friends' with matching names, symbols and descriptions. This encourages discussion and the students that are unsure can get help from their peers. Once the students have found their 'friends', the cards can be stuck onto a board, wall or window to form a display that students can refer to if necessary.

Circuit Symbol Diagrams

Once you are confident that students have an understanding of circuit symbols and are able to identify the circuit symbols in a circuit, you may wish to introduce the **Drawing Circuit Symbols Activity Sheet**. There is a lower-ability version of the **Drawing Circuit Symbols Activity Sheet** which offers more support with some of the circuit diagrams partially drawn. Students are given five diagrams of circuits and are asked to draw the corresponding circuit diagram using circuit symbols. You may find that different groups need different lengths of time to complete the tasks. Allow students time to self-assess and correct any mistakes. You may choose to do this as a peer-assessment activity instead.

Fault-Finding Activity

Introduce to students the Fault-Finding Activity and provide them with the **Fault-Finding Activity Sheet**. Place the **Fault-Finding Cards** around the room. Each of the six cards represents a circuit with a fault; you may wish to place equipment alongside each of the cards so that students are able to practise building the circuits. Students should identify the fault in each circuit and say whether they think the bulb will light or not. Students should be able to identify that each circuit is not a complete one or a battery is missing. Students should be encouraged to describe how they would fix the fault. You may find that different groups need different lengths of time to complete the tasks. Allow students time to self-assess and correct any mistakes. You may choose to do this as a peer-assessment activity instead.

Circuit Exam Questions

In order to consolidate learning, you may choose to ask students to complete the **Circuit Exam Questions**. Students should be encouraged to apply their knowledge of electrical components and circuit symbols to the exam questions. Allow students time to self-assess and correct any mistakes. You may choose to do this as a peer-assessment activity instead.

Plenary

What three facts would you tell a friend about electrical circuits?

Try to use some of the keywords from today's lesson in your answer.

Keywords

bulb

circuit

open switch

closed switch

faults