



# STELR Science – Year 6 – Electricity

|                          |                   |             |                |            |
|--------------------------|-------------------|-------------|----------------|------------|
| COURSE                   | SUB-STRAND        | MODULE      | TEACHING LEVEL | YEAR LEVEL |
| Science                  | Physical sciences | Electricity | Primary        | 6          |
| CURRICULUM ALIGNMENT     | CURRICULUM LINK   | TIMING      |                |            |
| Australian Curriculum v9 | AC9S6U03          | 5-6 lessons |                |            |

## KEY WORDS

Electric circuit, circuit component, conductor, insulator, electrical energy

## LINKS TO PRIOR LEARNING

Energy Transfers & Transformations [AC9S3U03/AC9S6U03](#)  
Properties of Materials [AC9S4U04](#)

| Learning intentions  | Success criteria  |
|--|---|
| <ul style="list-style-type: none"> <li>To understand that an electrical circuit needs an uninterrupted path for electricity to flow.</li> <li>To find out what components a circuit needs for electricity to flow.</li> <li>To determine the functions of circuit components such as a battery, wire, globe and switch?</li> <li>Identify materials as either conductors or insulators.</li> </ul> | <p>By the end of this unit, the learners will be able to:</p> <ul style="list-style-type: none"> <li>Construct a simple electrical circuit.</li> <li>Identify and describe the components of a circuit.</li> <li>Describe the components and function of a switch</li> <li>Classify materials as conductors or insulators.</li> </ul> |

| Unit content   | Activities and learning experiences  |
|--|--|
| <b>ACTIVITY 1.1</b><br>Simple electric circuits<br>Construct a simple circuit<br>Identify components | <ul style="list-style-type: none"> <li>Build an electric circuit using STELR Primary Electricity Kits.</li> <li>Record circuit in an annotated diagram or photo.</li> <li>Challenge circuit and diagram.</li> </ul>  |
| <b>ACTIVITY 1.2</b><br>Exploring components<br>Battery pack, globe and leads                         | <ul style="list-style-type: none"> <li>Detailed look at some of the components to investigate how electrical energy can move in the component/circuit.</li> <li>Investigate the MES Incandescent Globe and battery pack</li> <li>Make predictions</li> </ul> |
| <b>ACTIVITY 1.3</b><br>Conductors and insulators   | <ul style="list-style-type: none"> <li>Investigate what type of materials conducts electricity.</li> <li>Use alligator clips and circuit to test which materials complete circuit.</li> </ul>  |
| <b>ACTIVITY 1.4</b><br>The effect of a switch  | <ul style="list-style-type: none"> <li>Add a toggle switch to the circuit.</li> </ul>  |
| <b>ACTIVITY 1.5</b><br>Exploring components<br>– How a switch works.                                 | <ul style="list-style-type: none"> <li>Make a switch using everyday items to analyse the action of the switch.</li> <li>Test the effectiveness of various materials in the switch.</li> </ul>  |
| <b>ACTIVITY 1.6</b><br>Energy transformations using the testing station                              | <ul style="list-style-type: none"> <li>Investigating the transformation of electrical energy to kinetic (large testing station only), sound and light energy on the STELR testing station.</li> </ul>  |
| <b>WORKSHEET 1.1</b><br>Representing electric circuits   | <ul style="list-style-type: none"> <li>Activity to draw some circuit diagrams.</li> </ul>  |



STELR is a hands-on, inquiry-based and in-curriculum STEM program designed to be taught so that all students participate in inquiry learning. We also run free webinars for students about careers into STEM, and offer professional development for teachers.

[atse.org.au/stelr](http://atse.org.au/stelr)

# Risk assessment

| Risk / hazard  | Likelihood | Consequences | Rating | Control / prevention  | Responsible |
|--|------------|--------------|--------|---|-------------|
| Students could be exposed to live electrical current                                   | Unlikely   | Minor        | Low    | <ul style="list-style-type: none"> <li>STELR Primary equipment operates on low voltage</li> <li>Ensure students have switched off the circuit before making any modifications</li> <li>Ensure circuit is disconnected from power before being packed away</li> </ul>  | Teacher     |
| Burn from light globe becoming hot after extended period of use.                       | Unlikely   | Minor        | Low    | <ul style="list-style-type: none"> <li>STELR Primary equipment operates on a low voltage</li> <li>Instruct students to avoid touching the globe after extended use</li> <li>Encourage students to switch the circuit off when not in use to reduce heating</li> </ul> | Teacher     |
| Broken glass if light bulb is dropped or impacted                                      | Unlikely   | Minor        | Low    | <ul style="list-style-type: none"> <li>Only allow students to remove/replace the globe under supervision</li> <li>Instruct students to be careful when handling the testing station</li> </ul>  | Teacher     |
| Chemical burns or inhalation issues could arise from improper handling of AA batteries | Rare       | Moderate     | Low    | <ul style="list-style-type: none"> <li>The AA batteries used in the power pack should be handled and disposed of appropriately.</li> <li>Batteries should be removed from the power pack when not in use for extended periods of time</li> </ul>                      | Teacher     |

| RISK MATRIX |   | Likelihood                                       |                                 |                                  |   |  |
|-------------|---|--|---------------------------------|----------------------------------|---|--|
|             |   | 1. RARE  | 2. UNLIKELY                     | 3. MODERATE                      | 4. LIKELY   | 5. ALMOST CERTAIN                                    |
| Consequence |   | The event may occur in exceptional circumstances | The event could occur sometimes | The event should occur sometimes | The event will probably occur in most circumstances | The event is expected to occur in most circumstances |
| <b>1</b>    | <b>Insignificant</b><br>No injuries or health issue | Low  | Low                             | Low                              | Low   | Moderate   |
| <b>2</b>    | <b>Minor</b><br>First aid treatment                 | Low  | Low                             | Moderate                         | Moderate  | High   |
| <b>3</b>    | <b>Moderate</b><br>Medical treatment, potential LTI | Low  | Moderate                        | High                             | High  | Critical   |
| <b>4</b>    | <b>Major</b><br>Permanent disability or disease     | Low  | Moderate                        | High                             | Critical  | Catastrophic   |
| <b>5</b>    | <b>Extreme</b><br>Death                             | Moderate   | High                            | Critical                         | Catastrophic  | Catastrophic   |

Low risk      Acceptable risk and no further action required as long as the risk has been minimised as far as possible. Risk needs to be reviewed periodically.

Moderate      Tolerable with further action required to minimise risk. Risk needs to be reviewed periodically.

High      Tolerable with further action required to minimise risk. Risk needs to be reviewed periodically.

Critical risk      Unacceptable and further action required to minimise risk.

Catastrophic      Unacceptable risk and urgent action required to minimise risk.

## RISK RATING

Low     
  Moderate     
  High     
  Critical     
  Catastrophic