



## STELR Technologies – Year 5/6 – Electricity

COURSE	CURRICULUM ALIGNMENT	MODULE	YEAR LEVEL
Technologies	Australian Curriculum v9	Electricity	5/6
CURRICULUM LINK	TECHNOLOGY CONTEXT	TIMING	
AC9TDE6K02 AC9TDE6K05	Engineering principles and systems Materials and technologies specialisations	5-6 lessons	

### KEY WORDS

Energy Transfer, circuit components, electrical energy, conductors and insulators

### LINKS TO PRIOR LEARNING

**Students will have ideally completed the STELR Science - Year 6 Electricity unit before undertaking this project.**

(Technologies and Society) Factors that Impact Design [AC9TDE4K01](#)

(Physical Sciences) Properties of Materials [AC9S4U04](#)

Learning intentions	Success criteria
<ul style="list-style-type: none"> <li>To investigate how electrical energy can control movement, sound or light in a designed system or product.</li> <li>Describe the process needed to carefully plan and select components for a system to perform a specific task.</li> </ul>	<p>By the end of this unit, the learners will be able to:</p> <ul style="list-style-type: none"> <li>Design a switch from found everyday materials.</li> <li>Choose and use suitable tools and materials to construct design.</li> <li>Produce project plans that record design process.</li> </ul>

Unit content	Activities and learning experiences
<p><b>Investigating and defining</b> <a href="#">AC9TDE6P01</a></p> <p>Investigate needs or opportunities for designing, and the materials, components, tools, equipment and processes needed to create designed solutions.</p>	<ul style="list-style-type: none"> <li>Define the problem and understand the task at hand then gather information about the problem and existing solutions.</li> <li>Use understanding of electric circuits to investigate what makes a useful switch.</li> <li>Discuss why switches are a useful technology in society</li> <li>Investigate different types of switches.</li> </ul>
<p><b>Collaborating and managing</b> <a href="#">AC9TDE6P05</a></p> <p>Develop project plans that include consideration of resources to individually and collaboratively make designed solutions.</p>	<ul style="list-style-type: none"> <li>In collaboration with team members, propose a range of potential solutions that will operate as a switch.</li> <li>Set milestones for production processes and allocate roles for team members.</li> <li>Identification of resources required.</li> <li>Planning production steps and processes.</li> </ul>
<p><b>Generating and designing</b> <a href="#">AC9TDE6P02</a></p> <p>Generate, iterate and communicate design ideas, decisions and processes using technical terms and graphical representation techniques, including using digital tools</p>	<ul style="list-style-type: none"> <li>Collaboratively decide on design criteria for a design solution</li> <li>Develop criteria to evaluate the suitability of materials, tools and techniques for specific purposes.</li> <li>Iterate and modify design ideas to improve solutions.</li> <li>Evaluate benefits and costs of designed solutions.</li> <li>Reflect on designed solution.</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)



# STELR Technologies – Year 5/6 – Electricity

COURSE

Technologies

CURRICULUM ALIGNMENT

Australian Curriculum v9

MODULE

Electricity

YEAR LEVEL

5/6

TECHNOLOGIES

CURRICULUM LINK

AC9TDE6K02  
AC9TDE6K05

TECHNOLOGY CONTEXT

Engineering principles and systems  
Materials and technologies specialisations

TIMING

5-6  
lessons

UNIT PLAN

Unit content	Activities and learning experiences
<p><b>Producing and Implementing</b> <b>AC9TDE6P03</b></p> <p>Select and use suitable materials, components, tools, equipment and techniques to safely make designed solutions.</p>	<ul style="list-style-type: none"> <li>• Create a model/prototype to see if it solves the problem and meets criteria.</li> <li>• Match material and construction techniques to the design intention.</li> <li>• Choose appropriate PPE</li> <li>• Test the prototype to see if it solves the problem and meets the criteria</li> <li>• Identify areas for improvement</li> </ul>
<p><b>Evaluating</b> <b>AC9TDE6P04</b></p> <p>Negotiate design criteria including sustainability to evaluate design ideas, processes and solutions.</p>	<ul style="list-style-type: none"> <li>• Collaboratively decide on design criteria for a design solution</li> <li>• Develop criteria to evaluate the suitability of materials, tools and techniques for specific purposes.</li> <li>• Iterate and modify design ideas to improve solutions.</li> <li>• Evaluate benefits and costs of designed solutions.</li> <li>• Reflect on designed solution.</li> </ul>



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# 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
Chemical burns or inhalation 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
Cuts from sharp objects, from selected objects or broken glass if light bulb is dropped	Unlikely	Minor	Low	<ul style="list-style-type: none"> <li>Instruct students to select materials carefully for the maker activities, avoiding sharp objects</li> <li>Teacher should inspect all materials selected by students prior to use in manufacture and remove any dangerous/sharp materials</li> <li>Only remove the light globe under supervision</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> No injuries or health issue	Low	Low	Low	Low	Moderate
<b>2</b>	<b>Minor</b> First aid treatment	Low	Low	Moderate	Moderate	High
<b>3</b>	<b>Moderate</b> Medical treatment, potential LTI	Low	Moderate	High	High	Critical
<b>4</b>	<b>Major</b> Permanent disability or disease	Low	Moderate	High	Critical	Catastrophic
<b>5</b>	<b>Extreme</b> 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				
<input type="checkbox"/> Low	<input type="checkbox"/> Moderate	<input type="checkbox"/> High	<input type="checkbox"/> Critical	<input type="checkbox"/> Catastrophic