Government of **Western Australia**
School Curriculum and Standards Authority

SAMPLE TEACHING AND LEARNING OUTLINE

SCIENCE
PHYSICAL SCIENCES
YEAR 6

Science understanding Electrical energy can be transferred and transformed in electrical circuits and can be generated from a range of sources			
Week	**Syllabus content**	**Lesson content**	**Suggested resources**
1	**COMMUNICATING** Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal text **PLANNING AND CONDUCTING** Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks	**Types of energy and their source** • List the different types of energies – see resource Tiki the Penguin Energy • Discuss types of energy with students and use relevance to the community and on a larger scale • Recognise safety issues related to energy use and potential risks	Tiki the Penguin Energy http://tiki.oneworld.org/energy/energy1.html Synergy Tomorrow can't wait https://www.synergy.net.au/Our-energy Physics for Kids Energy Ducksters Education Site http://www.ducksters.com/science/energy.php
2–6	**COMMUNICATING** Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts **QUESTIONING AND PREDICTING** With guidance, pose clarifying questions and make predictions about scientific investigations **PLANNING AND CONDUCTING** Identify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks Decide variables to be changed and measured in fair tests, and observe, measure and record data with accuracy using digital technologies as appropriate	**What is a circuit?** • Explain how a torch works • Introduce students to correct symbols to be used – see resource guide • Label relevant parts of a torch • What is a conductor? • What is an insulator? • Where, how and why are conductors and insulators used in our homes? **<u>ACTIVITY IDEAS</u>** • Demonstrate how a circuit works using alfoil, batteries and a globe • Label and annotate diagram • Students to use appropriate symbols – see resource guide • Allow students to create their own circuits and think about variables they can change	World's Greatest Inventions https://www.youtube.com/watch?v=0WzAs5V034w How to draw an Electric Circuit diagram for Kids (cartoon) https://www.youtube.com/watch?v=taszKVykMBQ Primary Resources Electricity (varied materials) http://www.primaryresources.co.uk/science/science4a.htm Primary Resources Scientific Enquiry (and General Science Resources) http://www.primaryresources.co.uk/science/science.htm Science Kids Science Projects (teacher information)

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2–6	**PROCESSING AND ANALYSING DATA AND INFORMATION** Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies, as appropriate Compare data with predictions and use as evidence in developing explanations **EVALUATING** Reflect on and suggest improvements to, scientific investigations	**SAFETY NOTE** – alfoil will conduct heat that could potentially burn students **INVESTIGATION IDEAS** • What will happen when we change the length of the alfoil? (Teachers may choose alternate variables including, foil brand or thickness of foil) • How long can we make the foil and keep the globe lit? • Can we break the circuit and substitute other materials to conduct energy? This may include scissors, compass, sharpener, spoon Testing materials that are conductors of energy/insulators	Steps of The Scientific Method http://www.sciencekids.co.nz/projects/thescientificmethod.html
7–8	**COMMUNICATING** Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts **PROCESSING AND ANALYSING DATA AND INFORMATION** Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate	**ACTIVITY IDEA** • See Build a Light Bulb task in resource column. Teacher to demonstrate activity. It is suggested that this task is recorded using appropriate, available technologies. Opportunity to manipulate footage (slow down and pause where appropriate) would be beneficial. • Allow students to communicate and explain the process and science observed, using appropriate and relevant modes.	Build a Light Bulb (Circuits) – SICK Science https://www.stevespanglerscience.com/lab/experiments/build-a-light-bulb-circuit-science/

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9	**NATURE AND DEVELOPMENT OF SCIENCE** Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions	**Development of electricity** • Research the historical contributions made by science that allows people to access electricity	Kids' Corner What is Electricity http://kids.saveonenergy.ca/en/what-is-electricity/the-history-of-electricity.html
10	**USE AND INFLUENCE OF SCIENCE** Scientific knowledge is used to solve problems and inform personal and community decisions	**Environmental issues faced** • Apply knowledge of electrical energy accessed by people and the problems and environmental issues these create • What is renewable energy?	BTN Renewable Energy video links (varied to allow teachers to select what may be relevant and appropriate) http://search.abc.net.au/search/search.cgi?query=renewable+energy&collection=btn_meta&scope=btn%2Fstory&num_ranks=25