



The Power of One

Year 6 Science

Department of Education

www.amarooeec.eq.edu.au

Phone: (07) 4596 4333

Our vision is for a community that cares for self, others and the environment to achieve enough for all forever.

The Big Idea: Understanding energy and the choices we can make in our use of it.

Students' Blanket Role: Energy Problem Solvers

Program Snapshot

The Power of One program implements elements of the Australian Curriculum for Science as well as the Cross Curriculum Priority: *Sustainability*. Students assess and propose solutions for environmental problems arising from our use of energy.

Curriculum – Year 6 Science

For schools using C2C, this program complements **Year 6 Science Unit 2 - Energy and Electricity**.

Achievement Standard (extract)	Students “analyse requirements for the transfer of electricity and describe how energy can be transformed from one form to another when generating electricity... [They] explain how scientific knowledge helps us to solve problems and inform decisions and identify historical and cultural contributions. Students follow procedures to develop investigable questions and design investigations into simple cause-and-effect relationships.”
Content Descriptions/Elaborations	<p>ACSSU097: Electrical energy can be transferred and transformed in electrical circuits and can be generated from a range of sources</p> <ul style="list-style-type: none">• investigating how moving air and water can turn turbines to generate electricity• investigating the use of solar panels• considering whether an energy source is sustainable <p>ACSH100: Scientific knowledge is used to solve problems and inform personal and community decisions</p> <ul style="list-style-type: none">• considering how personal and community choices influence our use of sustainable sources of energy• discussing the use of electricity and the conservation of sources of energy• investigating how electrical energy is generated in Australia and around the world



Cross-Curriculum Priority — Sustainability

This priority addresses the ongoing capacity of Earth to maintain life. Students develop the knowledge, skills, values and world views necessary to contribute to more sustainable patterns of living, which means meeting the needs of the present without compromising the ability of future generations to meet their needs.

Main organising ideas covered:

Systems O1.2 All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing and survival.

Systems O1.3 Sustainable patterns of living rely on the interdependence of healthy social, economic and ecological systems.

World Views O1.5 World views are formed by experiences at personal, local, national and global levels, and are linked to individual and community actions for sustainability.

Futures O1.7 Actions for a more sustainable future reflect values of care, respect and responsibility, and require us to explore and understand environments.

Pre-visit (essential!):

An audio-visual (PowerPoint) presentation titled 'Energy and Electricity' is provided by Amaroo. *It is critical to the program that this is viewed and discussed in class prior to the excursion.* The presentation outlines the idea of energy, the ways we have of generating electrical energy and the current situation in Australia regarding energy sources for electricity.

Visit Day – Program

This program is based in the Eco Classroom which is an environmentally sustainable building with temperature probes, weather station, wind turbine, solar PV panels and battery.

Topics include:

- Why we should, and how we can, save energy in our everyday lives
- Renewable and non-renewable energy sources & technologies
- Comparing the relative merits of our main sources of electrical energy
- How energy can be transferred and transformed

Activities include:

- Examining solar panels and a wind turbine
- Running 240V electrical devices on solar power
- Using bike power to run electric lights and make a milkshake
- Testing the effectiveness of a solar shower
- Testing the effect of colour on energy (heat) absorption
- Using power monitors to test the energy consumption of various appliances
- Rotational hands-on group activities using iPads (looking at solar power, wind power, insulation, energy efficiency, and hydro power)



Call to Action

Students discuss practical measures they can take to help solve the problems associated with our energy use.

Post-visit consolidation ideas

Students could research and propose practical measures for saving energy at school. Useful ideas/resources can be found at:

- www.energy.gov.au/households
- <https://sustainabilityinschools.edu.au/resources>
- <https://sustainableschools.qld.edu.au/Default.aspx?tabid=717>

Some elaborations for Yr 6 science curriculum content descriptions may also be worthwhile to consider as a follow-up to this program, e.g.:

ACSSU096: exploring ways that scientific understanding can assist in natural disaster management to minimise both long- and short-term effects

ACSHE100: discussing how modern approaches to fire ecology in Australia are being informed by Aboriginal and Torres Strait Islander Peoples' traditional ecological knowledge and fire management practices

ACSHE100: recognising that science can inform choices about where people live and how they manage natural disasters

Amaroo EEC pedagogy

Amaroo is guided by the Place-Responsive Pedagogy, in particular Learning Beyond the Classroom.

This particular program uses the strategies of **Learning By Doing**, **Deep Understanding** and **Problem-based Curriculum**.

For more information please refer to Amaroo's [Pedagogical Framework](http://amarooeec.eq.edu.au/supportandresources/formsanddocuments/documents/pedagogical-framework.pdf) (amarooeec.eq.edu.au/supportandresources/formsanddocuments/documents/pedagogical-framework.pdf)