

Overview

Sustainability: Energy Years 11-12

SIP

Science in Practice



Toohey Forest
Environmental
Education
Centre



Science in Practice 2024

Unit option E: Sustainability

Concepts

Describe:

- Forms of energy
- That work is done when energy is transformed or transferred in a system
- The law of conservation of energy
- Energy efficiency
- Energy sources
- Difference between non-renewable and renewable resources

Information

Analyse and Interpret:

- Data from primary and secondary sources e.g., light bulb energy consumption, solar panels

Procedures and skills

Execute and Plan

- Calculations of energy consumption and carbon footprints
- Investigations into sustainability e.g. Under what conditions do wind turbines or solar panels produce the most energy?

Overview

Sustainability: Energy is a whole day Science in Practice program. It enables students to develop an appreciation of **concepts** which include: energy sources and forms, the difference between non-renewable and renewable resources, transformation and transfers of energy plus energy efficiency.

During the program students will use PowerMate data loggers to calculate energy consumption of household appliances and interact with demonstrations from the Green Energy Lab. The Lab provides an introduction to renewable energy and an opportunity for students to **analyse and interpret** data and construct diagrams to represent energy transfers and transformations e.g., pedal powered generated bike.

Students will also **execute** a renewable energy generation investigation by designing, constructing and testing a model wind turbine. Students will be challenged to **plan** and test how to generate the maximum amount of renewable energy by manipulating variables.

At the conclusion of the day, students will construct and race various K'nex powered vehicles to compare the advantages and disadvantages of different forms of energy.

This content aligns to a provided sample assessment which may be used by teachers at their discretion

Sustainability: Energy has been assessed as medium risk. A Curriculum Activity Risk Assessment is available on request.

