Year 6 Climate change action

An energy efficient school: *A quick and simple start to your school's sustainability journey*

Did you know?

In Australia, buildings account for up to half of the national electricity consumption and contribute to one quarter of the country's greenhouse gas emissions.

Introduction to energy efficiency

(15 minutes)

Brainstorm as a class:

What do we mean by energy consumption or energy use? What does it mean to be energy efficient? Are there ways you and your family try to save energy at home? How can we make our school energy efficient? Why is this important? What does energy efficiency have to do with climate change? Does energy efficiency mean something different in Tasmania than it does on the mainland?

Document your discussion on a white board. Gather as many ideas from the students as you can.

Australian curriculum connections

Learning Area Science	Content Descriptions
AC9S6U01	Investigate the physical conditions of a habitat and analyse how the growth and survival of living things is affected by changing physical conditions.
AC9S6U03	Investigate the transfer and transformation of energy in electrical circuits, including the role of circuit components, insulators and conductors.
AC9S6H01	Examine why advances in science are often the result of collaboration or build on the work of others.
AC9S6H02	Investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions.
Design & technologies	
AC9TDE6P04	Negotiate design criteria including sustainability to evaluate design ideas, processes and solutions.

Materials	Quantity
The school's electricity bills (from the last 12 months)	
Maths journals or notebooks	1 each
Laptops for research	
Worksheets – printed copies	1 per group

Your school is a hands-on laboratory

(30 minutes)

A look at energy consumption in your school

Prepare by gathering the school's electricity bills from the last 12 months.

- Ask students to predict their school's energy costs from last year.
- Write the total electricity costs for each month on the whiteboard and have students copy these numbers into their maths journals.
- *Start a discussion:*

  Are there differences between the months? Why or why not?

- In their journals, students calculate the total
- cost of electricity for their school in one year.
- Students calculate the average monthly cost of electricity.
- Share results and discuss. How did the predictions differ from the actual cost?

Challenge: can you reduce the energy and cost of running your school?

Detective work

(Students may need a few classes to gather information)

Your students will become detectives and conduct an energy investigation of the school. Your school is an energy system with different parts and students will investigate these parts to determine if improvements can be made towards efficiency.

The parts of your school's energy system:

1. Heating/cooling
2. Lighting – inside and outside
3. Refrigeration, printers/copiers, other appliances
4. Hot water, water coolers, Tea and coffee urns
5. Computers, ICT and monitors

Prepare by printing one copy of each worksheet.

- Divide students into five groups. Each group will be responsible for investigating one of the above energy systems.
- Each group completes their related worksheet. They can interview teachers, students, administrative staff or other staff at the school. All findings will be recorded on their worksheets.
- Students research how to save energy in their assigned energy system.

You may choose to have group members doing research while others investigate.

Share your investigation

(30 minutes)

Each group presents their findings to the class.

Brainstorm as a class:

Are there simple and easy things we can do to make our school more energy efficient? How will you make changes?

Some ideas with big impacts:

Replace outdoor security lighting to LEDs (this can generate massive savings)
Replace all indoor lighting to LEDs
Unplug chilled water fountains
Put timers on hot water urns
Use timers on other appliances
Turn light off in refrigerator
Unplug refrigerator over the holidays
Meet with staff to implement a 'Switch off policy' (end of day, weekends, and school holidays)
Create reminder signs to turn off computers and lights
Start 'Switch off awards' for classes with the highest number of days with no lights on at lunch
Implement an automatic shut down for computers
Turn thermostats down
Hold school assembly to present findings and bring the whole school on board
Calculate your school's ecological footprint by downloading this calculator from EPA Victoria:
https://www.epa.vic.gov.au/about-epa/publications/1216

Did you know?

By implementing simple energy efficiency strategies in your school, you can generate substantial and immediate cost savings as well as help to conserve the environment.

Options for assessment and extension

Topic	Options
Literacy – **Science Understanding** **Literacy** **Individual Activity**	Students create their own Glossary of the new vocabulary associated with energy efficiency. Research and complete the definitions in their own words. **Extension** Draw examples of these words in picture form.
Science – **Science Understanding** **Literacy** **Individual/paired Activity**	There are many ways to keep a school and its surroundings sustainable. Research new ideas to make a school energy efficient. If you had time and money to do so, what else would you do at/for your school and its surroundings? *Examples: create a native or butterfly/bee garden, install energy efficient windows, solar panels, heat exchange systems, or light reflective systems.* **Extension** Students create a model of their proposed 'dream' project. Students write a descriptive essay about their 'dream' project.