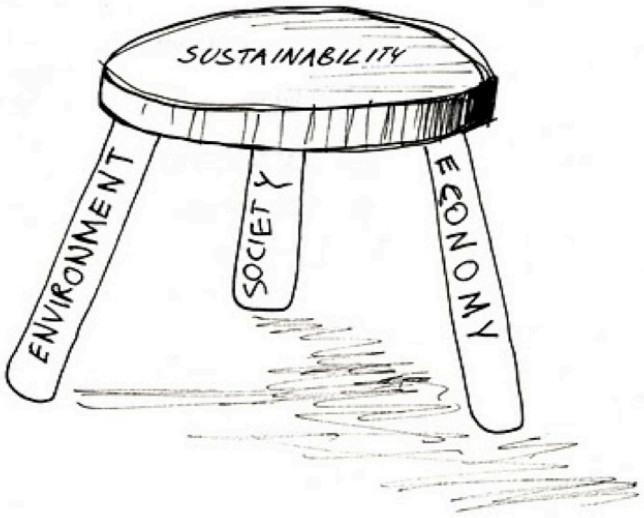
Sustainability and the Australian Curriculum

For each cross-curriculum priority, a set of organising ideas reflects the essential knowledge, understandings and skills for the priority. The organising ideas are embedded in the content descriptions and elaborations of each learning area as appropriate.

Code	Organising ideas
Systems	
OI.1	The biosphere is a dynamic system providing conditions that sustain life on Earth.
OI.2	All life forms, including human life, are connected through ecosystems on which they depend for their wellbeing.
OI.3	Sustainability of social and economic systems is closely related to sustainability of the environment.
OI.4	All people are connected through social systems on which they depend for their wellbeing.
World View	
OI.5	Communities throughout the world have a common interest in maintaining environments for the future and deserve to be treated equitably.
OI.6	A world view is important to ensure social justice and the effectiveness of action to improve sustainability.
Futures	
OI.7	Sustainability action is designed to intervene in ecological, social and economic systems in order to develop more sustainable patterns of living.
OI.8	Sustainable futures are shaped by our behaviours and by the products, systems and environments we design today.
OI.9	Products and built systems and environments can be designed and/or managed to improve both people's wellbeing and environmental sustainability.
OI.10	Social and economic systems can be designed, managed and/or used to improve both people's wellbeing and environmental sustainability.

Sustainability and the Australian Curriculum

- Sustainability education is futures-oriented, focusing on protecting environments and creating a more ecologically and socially just world through informed action. Actions that support more sustainable patterns of living require consideration of environmental, social, cultural and economic systems and their interdependence.



- When you view sustainability in this light, you can embed sustainability into all learning areas across the Australian Curriculum.
- Incorporating sustainability into your learning program need not be a time consuming add-on to an already busy teaching schedule.

Sustainability and Quality Teaching

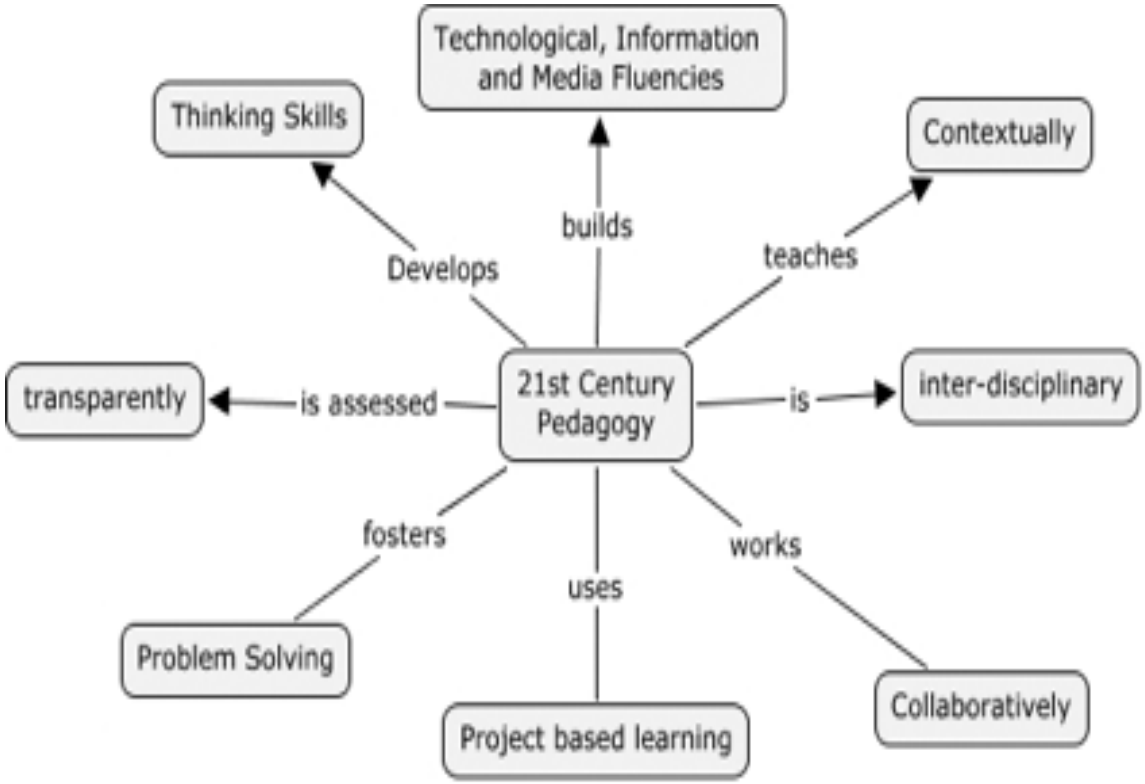
How could a school based project to reduce energy consumption demonstrate elements of quality teaching?

- **Intellectual Quality – eg Deep Knowledge** – students learn about the types and sources of energy.
- **Quality learning environment – eg Explicit Quality Criteria** – the project should lead to a reduction in school energy use.
- **Significance – eg Connectedness** – the project has real life significance to students as it involves addressing a global issue that has relevance to their lives.

	Quality Teaching Element
Intellectual quality	Deep knowledge
	Deep understanding
	Problematic knowledge
	Higher-order thinking
	Metalanguage
	Substantive communication
Quality learning environment	Explicit quality criteria
	Engagement
	High Expectations
	Social support
	Students' self regulation
	Student direction
Significance	Background knowledge
	Cultural knowledge
	Knowledge integration
	Inclusivity
	Connectedness
	Narrative

Quality Teaching and 21st Century Pedagogy

Sustainability education is an ideal way to incorporate 21st Century pedagogy - Ken Robinson



Project Based Learning and 21st Century Pedagogy

Conventional approaches

- Teacher centred
- Teacher directed
- Listen, memorise, repeat
- Independence
- Teacher decision making
- Knowledge of facts
- Direct instruction
- Short isolated lessons with
- pre-determined answers
- Norms based
- Assessment tests
- School based activities
- Quizzes and tests

Project based

- Student centred
- Self directed
- Student Discover, apply, present
- Collaboration
- Student and teacher decision making
- 21st Skills
- Varied instructional strategies
- Long term investigations
- Standards based
- Ongoing assessment
- Real world connections
- Reflection

Sustainability
Action Process

Project / Unit of work

Stormwater

Focus area:
Investigating catchment management in your local area

1 MAKING THE CASE FOR CHANGE

- Investigations of school drains and local waterways reveals the school may be contributing to local waterway pollution
- An investigation of the local waterway reveals it is polluted. Clean catchments are important for healthy waterways

2 DEFINING THE SCOPE FOR ACTION

- The class develops a plan to improve water quality like monitoring waterways, spraying a message on the school drains and informing the community about stormwater pollution

3 DEVELOPING THE PROPOSAL FOR ACTION

- The class carries out the actions from the plan

4 IMPLEMENTING THE PROPOSAL

- Waterway pollution and school drains are re-examined for improvements

5 EVALUATING AND REFLECTING

Workshop focus areas – Water? Energy? Waste? Biodiversity/ Grounds management?

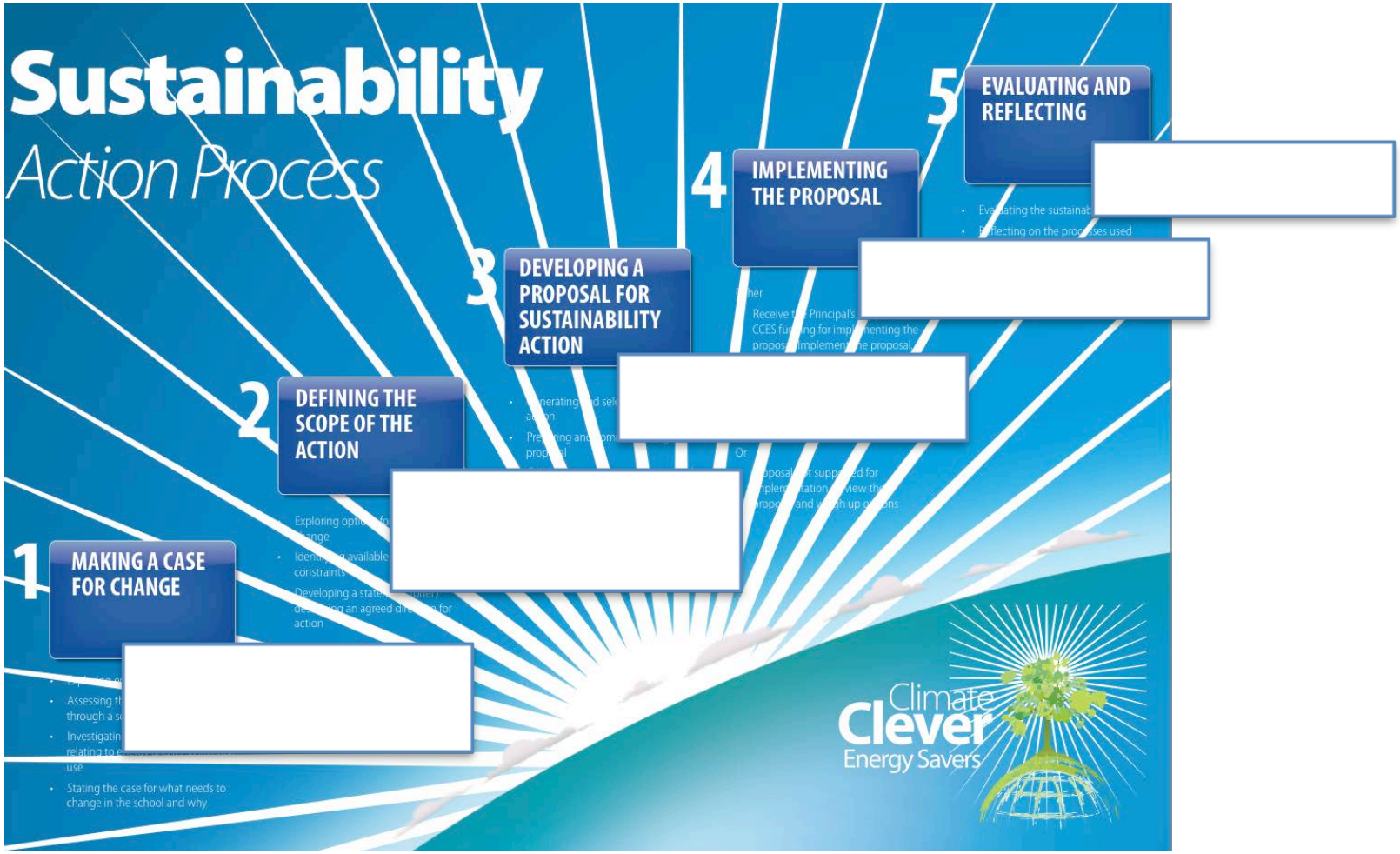
The SAP and Quality Teaching

- The Sustainability Action Process provides opportunities for teachers and students to demonstrate each of the elements of the Quality Teaching Framework. The following table identifies key opportunities for the QT framework to be embedded in learning tasks within Climate Clever Energy Savers.

	Quality Teaching Element	Step 1	Step 2	Step 3	Step 4	Step 5
Intellectual quality	Deep knowledge	✓	✓			
	Deep understanding	✓	✓	✓		✓
	Problematic knowledge				✓	
	Higher-order thinking		✓			
	Metalanguage	✓		✓		
	Substantive communication		✓	✓	✓	✓
Quality learning environment	Explicit quality criteria	✓		✓		✓
	Engagement	✓			✓	
	High Expectations			✓		✓
	Social support				✓	
	Students' self regulation					✓
	Student direction	✓		✓	✓	
Significance	Background knowledge	✓		✓		
	Cultural knowledge	✓				
	Knowledge integration		✓	✓	✓	
	Inclusivity	✓			✓	
	Connectedness	✓			✓	✓
	Narrative		✓			✓

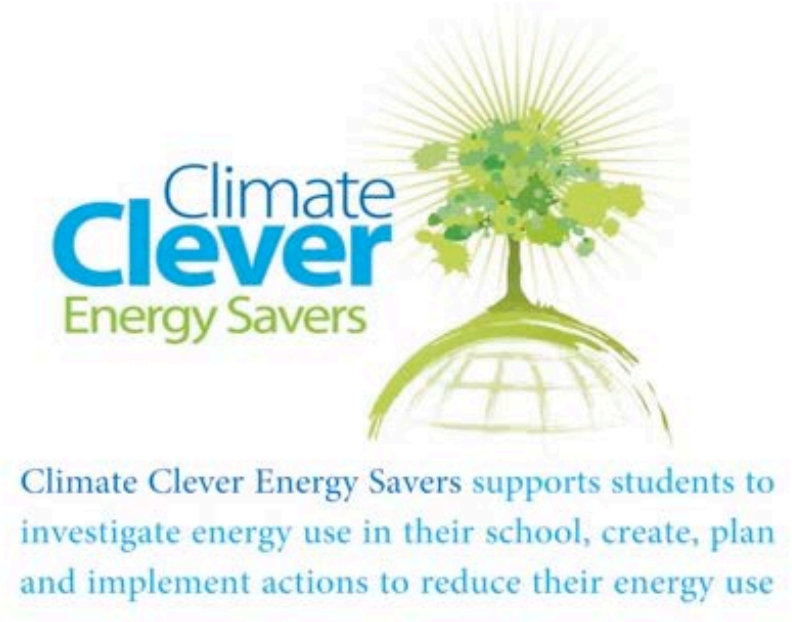
Sustainability Action Process – your ideas

- How would you use this template in your classroom/stage or whole school planning? Workshop with colleagues your stage



Consider the following approaches: **Thematic** eg water/energy, **Local school issue** eg litter/food waste, **Stage themes** eg climate change/biodiversity or **School community focus** eg kitchen gardens/local river/local park etc

CCES Sustainability Action Process film clip



NSW GOVERNMENT

- https://m.youtube.com/watch?feature=youtu.be&v=YefaJIF32Qo

Resources to promote sustainability

- DET Curriculum Directorate / environmental education cross curriculum resource hub is a one stop shop for all things environmental including curriculum support, resource management, grants, current EE projects etc
  http://www.curriculumsupport.education.nsw.gov.au/env_ed/index.htm

- Sustainable schools – Office of Environment and Heritage
  http://www.environment.nsw.gov.au/sustainableschools/

sustainableschoolsnsw

- Cool Australia http://coolaustralia.org

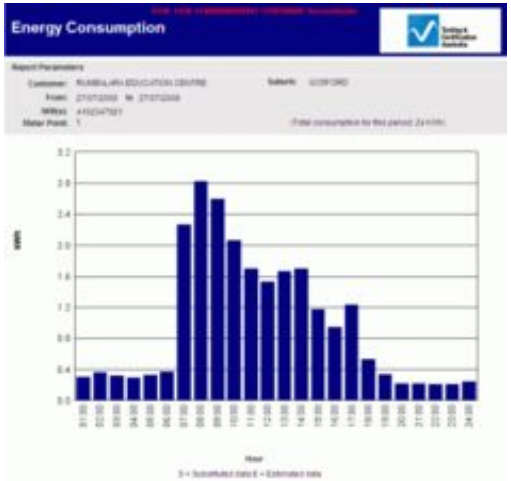
coolaustralia.org
Educating for a sustainable future

- Observatory Hill EEC Professional Learning site
  http://www.observhill-e.schools.nsw.edu.au/Site/Professional_Learning.html

OBSERVATORY HILL
ENVIRONMENTAL EDUCATION CENTRE

Energy Management

- **Webgraphs** - http://www.webgraphs.com.au
- **DEC Energy Management Manual**
- **NSW DEC electricity consumption benchmarks**



Total average - 1.78kWh per student per day

Total average per head - 359 kWh per annum

Primary school average – 278 kWh per student per year

Secondary School average - 442 kWh per student per year

DEC Asset Management Website (Waste, Water, Energy etc)

https://detwww.det.nsw.edu.au/assetmanagement/envisust/index.htm

Water Management

- Water audits
- Water efficient appliances
- Smart meters
- Water efficiency education eg using half flush buttons, reporting dripping taps, turning taps / bubblers off etc

Benchmarks for primary schools

Water use benchmark litres/student/day	Rating
< 3	Very low water use (may be due to very high water efficiency)
3 - 9	Normal/efficient water use
9 - 18	Medium water use
18 - 50	High water use
> 50	Extremely high water use

Waste Management

Examples of management strategies

- No waste lunches
- DEC waste contracts (recycling)
- Local council support (recycling)
- Composting and worm farming
- Eating in class rooms before play
- Low waste events
- Environmentally friendly / low waste canteens
- Clothing swaps
- Nude food days
- No waste Wednesdays

Observatory Hill EEC program support

Centre Fieldwork programs

Come to the party – K / 1 / 2 HSIE and History

Caring for Critters – 1 / 2 Science and technology

Bush Christmas - Stage ES1 / 1

The Rocks - Stage 2 - HSIE and History

Bring Back the Block - Stage 3 - Mathematics and History

The Rocks - Stage 3 - HSIE and History

Big Build Up – Stage 3 Science and technology

Transporting Sydney 3 Science and technology

Project based incursions

Spaceship Earth – Stage 2 - HSIE and Science and Technology

Taking care of our place – Stage 2 - HSIE and Science and Technology

Creature Feature - Stage 2 - Investigating and protecting marine environments.

Enviromaths - Stage 3 - Mathematics and sustainability education in your school

Grow Plus - (K-6) 3/4 classes - Promoting greater student engagement in your kitchen garden

Local Area Studies - Stage 2 & 3 - Supporting cross curricular investigations of local environments

Watch our Watts Stage 3 - Mathematics and sustainability education in your school

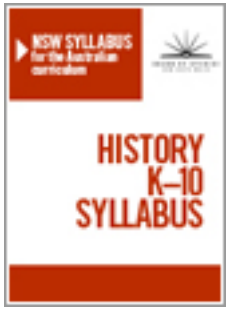
Water Wiseguys Stage 3 - Mathematics and sustainability education in your school

Project Flying Fox – Stage 3 – Science and Technology

Special focus Sustainability Education projects

Grime Scene Investigation – Stage 3 Science and technology

Learning Across The Curriculum
History Stage 2 Case Study



Learning across the curriculum Sustainability statement

History enables the development of students' world views, particularly in relation to actions that require judgement about past societies and their access to and use of the Earth's resources. Students are provided with opportunities to develop an historical perspective on sustainability by understanding, for example, the emergence of farming and settled communities, the positive and negative impacts of peoples and governments on pre-modern environments, the development of the Industrial Revolution and the growth of population, the overuse of natural resources, the rise of environmental movements as well as the global energy crisis and innovative technological responses to it. Making decisions about sustainability to help shape a better future requires an understanding of how the past relates to the present, and needs to be informed by historical trends and experiences.

Learning Across The Curriculum
History Stage 2 Case Study

Key concepts and skills to promote teaching of sustainability

- **Continuity and change:** some things change over time and others remain the same, eg aspects in the local community that have either changed or remained the same; changes to the lives of Aboriginal peoples with the arrival of the First Fleet.
- **Cause and effect:** events, decisions or developments in the past that produce later actions, results or effects, eg how conditions and decisions in Britain resulted in the journey of the First Fleet; causes of change in the local area/state.
- **Perspectives:** people from the past will have different views and experiences, eg views on the arrival of the British in Australia from a British and an Aboriginal point of view.
- **Empathetic understanding:** developing an understanding of another's views, life and decisions made, eg developing an understanding of the life and attitudes of an early colonist or convict.
- **Significance:** importance of an event, development or individual/group, eg the significance/importance of national days/holidays; the significance of the contributions of an early settler.

The Rocks Stage 2 program

Content: First Contacts

1. Investigates the lives of 4 children at different times in The Rocks history
2. Gunyarrah, a pre European contact Gadigal Aboriginal girl
3. James, a convict boy
4. Jim, a boy living around the late 19th Century
5. Brooke – a girl living in the 21st century

For each time period, students discover how the children interacted with their environment for water, food, shelter, waste removal etc. They them compare this interaction to their own lives.

Learning Across The Curriculum
History Stage 2 Case Study

Stage 2 Content

First Contacts

1. Investigate, drawing on Aboriginal and Torres Strait Islander community representatives (where possible) and other sources, the traditional Aboriginal way of life, focusing on people, their beliefs, food, shelter, tools and weapons, customs and ceremonies, art works, dance, music, and relationship to Country
2. Stories of the First Fleet, including reasons for the journey, who travelled to Australia, and their experiences following arrival (ACHHK079)

Students:

- identify reasons for the voyage of the First Fleet and explain why various groups were passengers
- describe the establishment of the British colony at Port Jackson
- using a range of sources, investigate the everyday life of ONE of the following who sailed on the First Fleet and lived in the early colony: a soldier, convict, ex-convict, official