

Sustainability Science

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Project Title	Sustainability Science in Rural and Regional Victorian Schools: Documenting best practice
Project Team	Dr Lyn Carter and Dr Caroline Smith (Australian Catholic University, Melbourne Campus)
Period	June 2006 – December 2007
Funding Agency	SiMERR
Organisational Base	SiMERR Victoria

Description

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The key issue facing this century and beyond is the complex question of how to effect the transition towards a sustainable future, and education is seen as a critical platform for this transition. The science domain is clearly a major vehicle for learning and understanding the concepts, skills and issues that underpin transitions to sustainability. The link between science education and sustainability relates to the understanding of the critical need for maintaining natural capital, i.e., an understanding of the importance of healthy soil, biodiversity, air quality, energy considerations and waste issues. This is a particularly critical issue for regional and rural areas, as a healthy rurality depends on the natural capital of the region that is the life support system for any living community.

This project aimed to identify and document best practice in sustainability science in selected primary and secondary schools in the targeted region. The region chosen for this activity (central and north west Victoria) is one that has experienced a decline in natural capital, especially through severe drought, over the past decade.

Individual and/or focus group interviews were held with all participants. School tours were undertaken focussing on showcased class based sustainability activities. These were documented and other classes observed where appropriate.

In the first instance, the team worked with teachers and school leadership to document the processes and outcomes that have lead the selected schools to become successful sustainable schools, paying particular attention to the links between science education and sustainability outcomes. The particular differences between the primary and secondary schools were noted and compared. The team also researched the professional development needs of teachers to achieve effective science education through the vehicle of sustainability.

Participants

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- St Francis in the Fields Primary School, Strathfieldsaye – Principal, Sustainability Coordinator and two Year 3 classroom teachers.
- Mildura West Primary School, Mildura - Principal, Sustainability Coordinator and two Year 3 classroom teachers.
- Galen Catholic College, Wangaratta – two Year 9 classroom teachers.
- St Joseph's Primary School, Beechworth - Principal, six classroom teachers across all year levels.
- Frayne College, Wodonga – Deputy Principal, two classroom teachers.

Findings

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The project research outcomes/findings included:

- The development of five case studies of best practice in sustainability science education. These schools showed a very broad range in the types of sustainability programs they were implementing. However, they all fell into two broad categories of curriculum focussed programmes and operational activities such as waste, energy and water reduction initiatives.
- The provision of data and recommendations to schools and the wider science education community on what constitutes successful practice for other schools wishing to become sustainable schools. The particular focus was on identifying enabling factors and barriers to successful implementation.

Enabling factors included:

- Rurality as a context for science education;

- Access to rural resources;
- Ready access to projects and authentic problem solving;
- Versatility of teachers; and
- Networking opportunities.

Barriers included:

- Lack of professional development;
- Lack of confidence in teaching science;
- Teachers unable to conceptualise what they were doing as science (particularly primary); and
- The development of a citizen science approach to rural science education utilising sustainability. While much has been written on the disadvantages of rural and regional schools in terms of access to quality science education, if rural and regional schools adopt an approach to science education that incorporates citizen science, then their close contact to both their own communities and their natural capital forged through sustainability projects can become an advantage. Quality science education is reinterpreted as how local opportunities can be harnessed to support learning.

Outcomes

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Published paper

- Carter, L., & Smith, C. (in preparation). Rurality, sustainability and citizen science: new openings for an authentic science education. To be submitted to International Journal of Science Education.

Conference presentations

- Carter, L., & Smith, C. (2008, March) Sustainability Science in Rural and Regional Victorian Schools: Documenting best practice. Paper presented at the SiMERR Victorian Hub Forum, Geelong.
- Carter, L., & Smith, C. (2008) Rurality, sustainability and citizen science: new openings for an authentic science education. Paper to be presented at the annual conference of the Australian Association for Research in Education (AARE), Brisbane, December.

Impact

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We all need to work towards sustainable futures and working locally allows for both tangible outcomes and community capacity building. Citizen science as an approach to science education allows people to work towards solving their own locally based problems. Hence, rurality which enables that close connection between the problem in the community where the schools are located, local scientific expertise, and the schools themselves provides an opportunity for the development of authentic citizen science projects. Rather than being seen as a deficit, this approach to science education in rural areas offers a timely way of enacting science education given the contemporary problems of the world. Certainly it is already happening in many rural schools.

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