

Making Waves: Engaging Science Projects

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Introduction

A collaborative project, called SOS: Science of Sustainability, explored student engagement and learning in the science, technology and mathematics of water management. This Australian Schools Innovation in Science, Technology and Mathematics (ASISTM) project involved six schools (state and independent, primary and secondary, in geographically disparate suburbs in the metropolitan area of Perth, Western Australia), tertiary institutions, and government and non-government organisations.

Project Purpose

To improve student engagement and learning outcomes in science, technology and mathematics through innovative, community action-based, education for sustainability initiatives focused on water resource management. The project aimed to provide opportunities for deep learning in real life contexts, richly resourced through partnerships and curriculum integration.

Project Program

The project was undertaken over an eighteen month period, 2007 – mid 2008. It incorporated a range of learning activities for students; those in which all the schools participated and those relevant only to the individual schools. There were four *common activities*.

- Healing the Swan: 3 day student excursion along the Swan River.
- Perth Groundwater Festival: SOS project displays.
- Whole-of-project website: SOS project showcased.
- Partnerships Model: implementing sustainability programs through partnerships.

Each of the schools involved in the project also conducted their own *mini-projects* relevant to their local needs.

- Exploring the properties of water through the design, construction and testing of a water feature and Coolgardie Safe.
- Understanding storm water and water quality monitoring of lakes and rivers.
- Investigating water pollution, then designing and constructing a physical Periodic Table to understand the properties of the elements identified.
- Examining the water-saving features of native plants, then propagating and growing local native species.

- Understanding the marine environment, particularly coral reef ecosystems.

Outcomes

Improved student engagement and learning – a wide range of innovative, real-life, richly resourced learning experiences were conducted.

Common activities –

- Healing the Swan:



Students learnt about the history, science and technology of river management from indigenous elders and other experts, and participated in water quality monitoring activities.

- Perth Groundwater Festival:



SOS project products and processes showcased.

- Whole-of-project website: <http://scienceofsustainability.net> illustrates project programs and outcomes.
- Partnerships Model: shown on above website.

Mini-projects -

Photographs illustrate some of the mini-projects and the high level of student engagement achieved.



Photo - Students exploring the reef ecosystem at Coral Bay.



Key Outcomes Achieved -

Enhanced student engagement:

Improved student knowledge and skills:

Photo- Students conducting pH, salinity, temperature and turbidity assessments at the Swan River.

Developed effective, collaborative partnerships:

Photo - Students working with experts in native plants.

Shared learning with a wide audience:

Photo - Showcasing the Periodic Table at the Groundwater Festival, Whiteman Park, November 2007.

Conclusion

The SOS project was effective in *making waves* in student learning



outcomes, through enhanced student engagement and improved understandings about water resource management. This was achieved by innovative programming involving action-based environmental initiatives in the community and partnerships with many organisations. Students presented their findings at numerous public and political forums. Other outcomes included improved student interest, attitudes, knowledge and skills in science, technology and mathematics, and the development of a model for implementing sustainability programs through partnerships.

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