Making Waves

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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 with a focus 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 – 2008. It incorporated a range of learning activities for students; those in 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 water management from indigenous mentors and other experts and participated in water quality monitoring activities.

Perth Groundwater Festival

Project products and processes showcased. Students investigating the elements of the Periodic Table in the context of heavy metal pollutants in water.

Whole-of-project Website

http://scienceofsustainability.net

Illustrates project programs and outcomes.

Partnerships Model

The Model for Sustainability Programs Utilising Partnerships was progressively developed, using an evidence-based approach over the life of the project.

Key Outcomes Achieved

Common activities and mini-projects -

Enhanced student engagement

Students investigating the marine environment at Coral Bay in WA.

Improved student knowledge and skills

Students conducting temperature, turbidity, pH and salinity testing of river water, along with macroinvertebrate investigations.

Enriched transcultural communication

Indigenous mentor sharing understandings about the river with students.

Developed effective collaborative partnerships

Students discussing understandings about the river with a mentor.

Shared learning with a wide audience

Students sharing their understandings about the science and technology of water management at the Groundwater Festival.

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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