



EXPERIMENT: PhD student Simona Carbone with Madeleine, Lana, Emma and Liana at Loreto College. Picture: CALUM ROBERTSON

Science partners aim to halt decline

SARAH KELLETT
CLARE PEDDIE

A NATIONAL program that pairs scientists with teachers in schools is building momentum, with more than 100 South Australian partnerships striving to halt the exodus of students from science and mathematics.

The SA co-ordinator of Scientists in Schools, Dr Rebecca Anderson from CSIRO Education, said international research had witnessed a "disturbing" trend in attitudes to science among Australian teenagers.

"We were country 54 out of 57 for general interest in learn-

ing science," she said. "That's where this program fits in. It's one of the things we are trying to address."

Although the OECD report looked at Australian students aged 15, subsequent studies have suggested the shift in attitudes comes much earlier.

A review by eight of the nation's leading universities, including the University of Adelaide, found students first started losing interest in maths and science in primary school.

To combat the trend, Flinders University PhD student Simona Carbone is paired with Isabelle Roberts and her Year 2 class at Loreto College. "I try to come up with exper-

iments and examples based on what they're doing at the time," Ms Carbone said.

To complement history lessons, she brought scientific instruments used now and in the 1900s, including thermometers and pipettes.

Mrs Roberts in the past found teaching science difficult, but said the program had opened new doors for her.

"It's fantastic for me," she said. "I'm usually an arts teacher ... but I've had a ball teaching science for the past two years."

Scientists and teachers can learn a lot from each other. Scientists may know more about the concepts, but

teachers know more about children and how to connect on a level they understand.

Scientists in Schools is run by the CSIRO with federal government funding. It is open to graduates with honours or higher degrees in science, engineering or mathematics. Contact can be purely by email or phone or by visiting the school and taking part in lessons.

Year 2 student Emma enjoys science lessons with the scientist and teacher pair. "Because it's fun," she said. "Because you can learn new things."

For more information, visit www.scientistsinschools.edu.au.

My Research



Water resource management

■ **NAME:** Dr Julia Piantadosi, Research Fellow
■ **LOCATION:** UniSA's School of Mathematics and Statistics

■ **BACKGROUND:** For the past 10 years I have worked in the area of water management. My PhD thesis was titled Optimal Policies for Storage of Urban Stormwater. It's important to encourage more students to study mathematics and science at school and university so we have young professionals with the skills to respond to climate change by developing sustainable solutions.

■ **RESEARCH:** My research focus is water resource management. This research addresses a national research priority. All major metropolitan water supply systems are under extreme stress. Our projects have attracted much interest from the mathematical community as well as from water managers and water policy makers.

This research continues to provide leadership and training of national importance for postgraduate students, five of whom I co-supervise.

■ **TECHNOLOGY:** A major practical outcome from my PhD was a scalar vector graphics simulation of the City of Salisbury's Parafield stormwater harvesting scheme. The simulation has been used to help water managers understand the effects of various water management policies with a view to further improving them. We are currently working on a simulation of the Murray-Darling system, which will provide an effective showcase of our water management policies.

■ **RESULTS:** My research has been published in international journals of mathematics, optimisation, environmental modelling, water management and hydrology and I present regularly at major international conferences. My PhD student and I presented papers at the ALIO-INFORMS, Institute for Operations Research and the Management Sciences, joint international meeting in Buenos Aires, Argentina, this month.

Endangered fish plan for basin

SARAH KELLETT

A PLAN to return endangered fish species to the Murray-Darling Basin has won more than \$500,000 in grants from the Federal and State Government.

Flinders University Associate Professor Luciano Beheregaray said the project would look at how well fish adjusted to new conditions based on analysis of their DNA. "These small fish are endangered," Prof Beheregaray said. "Their wetland habitat in the lower Murray dried out in 2007."

The fish have been kept in government and private hatcheries, and are soon to be moved to facilities at Flinders University. They are expected to be returned to their restored habitat

over the next three years. "The Murray-Darling Basin has changed dramatically and is likely to keep changing, especially with climate change," the professor said.

Small populations bred in captivity are at risk of inbreeding. DNA testing can ensure mating pairs are not too similar to breed.

However, natural selection tends to increase the appearance of genes which help an animal survive and reproduce.

These two actions can oppose each other. Captive breeding techniques may try to increase differences in genes, while natural selection decreases differences in particular genes.

The project works to bring these forces together and breed genetically strong fish.

Tree measures up as state giant

CLARE PEDDIE
SARAH KELLETT

A GIANT oak tree on school grounds at Stirling is the state's biggest - for now.

The National Register of Big Trees is constantly updated as more trees are nominated and measured.

Register co-ordinator Derek McIntosh said the oak at Stirling East Primary School was the first nominated by a school group.

"The students are so excited and proud about having found and nominated the oak tree that's made it to the National Register of Big Trees," he said. "Hopefully it will encourage other schoolkids around Australia to do a similar thing."

Points are awarded using a formula that includes, girth, height and crown spread. The Stirling "champion" has a circumference of 4.41m, height of 22.5m and crown of 30m.

Teacher Petera Atkinson worked with one of the Year 6-7 classes on the nomination.

Finding out how tall the tree was difficult, but Year 7 student Scott enjoyed the challenge. "I liked learning to measure the height without using a tape measure," he said.

They measured its height from a distance, recorded their distance from the tree then calculated the actual height using mathematics.

For more information, go to www.nationalregisterofbigtrees.com.au.



BIG OAK: Stirling East's Bonnie, Hannah and Scott.