



# Cool tools involve Northern Sydney students in ecostudy projects

*Bill Minnis*

The Local Ecostudy project developed by Macquarie ICT Innovations Centre (MacICT) in collaboration with Field of Mars Environmental Education Centre and Macquarie University Department of Education was launched at the start of the 2008 school year. It was conceived as a way of making environmental education an authentic and engaging experience for primary and secondary students, while teaching them how to use new technologies in the field.

Director Deborah Evans says: "Instead of studying text and pictures in the classroom, we wanted to give students exposure to real fieldwork using mobile data collection devices such as Nova5000 data loggers, iPhones and digital cameras.

"It's a fast track way to get students into collaborative learning while building the confidence of the individual."

Now in its third year, the project continues to attract enthusiastic participation from schools in Sydney's Northern Sydney Region, including the Northern Beaches area. The schools participating in the project have collaborated with the Narrabeen Coastal Environment Centre to investigate issues specific to their



local ecosystem <http://www.pittwater.nsw.gov.au/environment/cec>.

The project pairs a secondary school with a primary school and older students working with younger "buddies"; typically two 14-year-olds with two 10-year-olds, in a team of four.

Depending on whether the school is a primary or secondary, the typical project life is around 10 weeks. Participating teachers develop and plan their own projects based on the curriculum, often referencing their school's School Environmental Management Plan (SEMP). Comprehensive assistance and support is available for teachers at the MacICT website



<http://www.macict.edu.au>.

Experience of early projects demonstrated the importance of teachers and students learning how to use the devices competently before a new study gets underway in the field.

Regular teacher training days are held and all students attend a simulation day at the Innovations Centre, during which they complete three activities in the surrounds of Macquarie University's beautiful lake.

The simulation fieldwork starts with the students choosing which of three activities they want to complete first. They then use GPS and Google Maps on iPhones to navigate from the



Field trips are enhanced with technology



Innovations Centre through the campus and down to the lakeside. When they arrive within 17 m of where the activity has been set up, Macquarie University's Learning Activity Management System (LAMS), using the iPhones as the interface, takes over to guide the students step-by-step through the sequence of learning activities.

The Nova5000 data loggers, which have bright screens and inbuilt software, are used to draw transects, record measurements and store images captured on the iPhones or digital cameras (since the arrival of the iPhone, cameras are now less used). LAMS sample videos show how each task should be approached, and these can be replayed whenever the team needs to refer back. MacICT and the school's teachers are on hand to help, but the emphasis is on self-guided learning.

"Instead of standing around listening to a teacher, the students work in their teams at their own pace," Deborah Evans says.

MacICT staff members join each school for its project field day, bringing a toolbox for each team. The toolbox contains a Nova5000, iPhone, digital camera and a set of the hand tools and sample jars that will be needed during the study. Nova5000 plug-in Fournier sensors are used to record data such as temperature, light intensity, humidity and sound for later analysis.

With the fieldwork completed, the data recorded, insects, leaves and plants identified and transects drawn – all captured on the Nova5000 devices – the class project moves on to the reporting and analysis phase. Each group's data are downloaded onto an assigned project wiki space where it can be accessed, shared, massaged and assembled into a final report – complete with graphs, charts, maps, images, descriptions and video clips.

Deborah Evans says: "The students are completely absorbed in the tasks throughout the life of the project.

"At the point where the project is finished, the students have learned a great deal about a local micro-environment, how real scientific fieldwork is done, and how to use innovative technologies to enhance their learning... they just love it."



## Macquarie ICT Innovations Centre www.macict.edu.au

**M**acICT is located at Macquarie University, Sydney. It is a collaborative agreement between the NSW Dept of Education and Macquarie University, which provides NSW DET students and teachers with access to innovative technologies in teaching and learning.

The Centre's focus reflects a project-based approach to working with teachers and their students. Its core business includes a comprehensive teacher professional learning and support program where MacICT staff and school teachers develop projects that are curriculum-based and meet the individual needs of the teachers and their classes.

For the ecostudy project, MacICT works in cooperation with the Field of Mars Environmental Education Centre <http://www.fieldofmars-e.schools.nsw.edu.au/index.html>.

### Contacts

#### Deborah Evans

Centre Director  
Deborah.Evans2@det.nsw.edu.au

#### Rodney McLeod

Relieving Centre Director  
Rod.n.mcleod@det.nsw.edu.au

#### Karen Blackwell

Program Manager  
karen.blackwell@det.nsw.edu.au

Keepad Interactive, an industry partner of MacICT, supplies the Nova5000 and a range of over 60 Fourier sensors. Visit <http://www.keepad.com.au> for a range of products.