

# winner of the 2009 ACCE and ICTEV teacher of the year:

## ROLAND GESTHUIZEN, WESTALL SECONDARY COLLEGE

Roland Gesthuizen, Westall Secondary College is the 2009 recipient of the ACCE and ICTEV Awards for Teacher of the Year.

### IN RESPONSE TO AWARD CRITERIA

#### • GLOBE - global learning and observations to benefit the environment

Rather than just use the internet for selfless school promotion, Roland was keen to use it to collaborate and communicate with the outside world. As a charter member of the GLOBE project in 1996, he was trained by CSIRO education and sponsored by the Monash Co-operative Research Centre for Atmospheric Research. The project was the inspiration of the then US Vice President, Al Gore to enable schools to use the internet to link students with climate scientists. He returned and now teaches environmental science with a range of Information Technology tools. Despite funding cutbacks to environment education initiatives, Roland persisted with efforts to support the program at no cost to our school.

Over the past decade he has organised the collection of over 5,000 atmospheric and biological data with around 300 Year 9 information technology students. His group of students were able to use their findings to help secure feral proof fencing for the local park where they were undertaking their long term baseline environmental measurements. In July 2008, he was invited to speak at Fort Collins, Colorado about his work at Westall, providing valuable feedback about how the program could be extended in Australia and proudly showcasing the work by our students.

#### • CloudSAT - remote sensing, climate modelling and cardboard satellites

Roland was able to organise a visit from NASA Mission Director, Debra Vane. As part of the NASA CloudSAT mission, students helped collect ground-truth satellite images on their flyover path by taking photographs of a hemispherical reflector and posting these online. Curriculum activities of particular note by NASA education staff included the educational cloud dance recorded by a film crew, cardboard and electronic satellite models made by our students that adorn the ceiling of the classroom. The satellite activity has been published as an exemplary ICT activity for VELS progression point assessment task

and can be downloaded from the VCAA website. It makes a significant use of Web 2.0 elements of collaboration and dialogue and reflection, 3D design, construction and visualisation elements. In July 2008, with the help of a NASA satellite research scientist he helped to create a small training video especially for his students and valuable feedback about Australia's role in remote sensing, electronics and climate modelling.

#### • EarthDial - one sun and two planets

Following a successful internet webcast of the Mercury solar transit, made in a school classroom with a home made pinhole camera and webcam, Roland's class was approached to build, and mount on the roof of the school, an Earthdial as a southern hemisphere reference point. On the back of the two NASA rovers now crossing the surface of Mars are small versions of the same time measuring Marsdials. By comparing web cameras, students have gained a better understanding about the dynamics of our plants and shared in a larger scientific experiment. Along the journey of building and mounting the instrument on the roof of our college, our students learned considerable science and technology, even resolving a problem with solar glare by adding a polarising filter.

Whilst other Earthdials have been constructed by science museums around the world, it is of note that the Australian station was designed, built and still maintained by a group of Year 10 students. It still operates from the roof of the school, alongside a Davis Automated Weather Station that the students have added to the instrument array.

#### • Khmer - preserving a fragmented and precious culture

Westall Secondary College is the only Australian secondary school to teach Khmer to the senior level. Considering the dark period of cultural vandalism that has destroyed much of the Cambodian culture, it has been critical to enable these students to use computer technology in ways that celebrate their language. Roland was eventually able to deploy Khmer as a native and stable language onto all our school computers. For the first time, our Cambodian students had the opportunity to engage with technology in a way that gave authority to their language and history by authoring documents in their own language script and keyboard.

Roland understood the technical issues and overcame some significant problems and hurdles related to implementing the Khmer keyboard and changes required for it to work on a school network. He sourced assistance from the Khmer OS community

working with the Cambodian government and some expatriate programmers. In all, a precious step forward for a small Victorian community that the IT revolution left behind.

#### • OLPC - one laptop per child

From being the first school in Victoria to deploy Moodle across the school, Roland now supports the engagement with learning technologies and is engaged with local issues of ownership, freedom and control over technology in the classroom. Following his work engaging Khmer students, Roland worked with overseas colleagues to build bridges with third world countries with the OLPC project, and education initiative to provide access to computers using cheap but robust wireless hardware. Westall Secondary College is now the proud recipient of these small green laptops that Roland was able to acquire.

Not only has he deployed and used this technology in his programming and even remedial mathematics classes, he has openly shared this hardware to encourage the wider community engagement with this initiative. As a member of the Australian OPLC friends, he is exploring and supporting ways to deploy this hardware to Pacific Island communities that have little or no access to this technology.

Roland continues to support this project at his college by supporting Sugar, the open source software environment that operates on these laptops. Recently he has been encouraging the teaching of Python and Scratch programming languages, running free workshops for other teachers, openly sharing his Moodle online coursework and lesson plans. We look forward to the deployment of this technology to our Cook Island and Cambodian sister schools and the opportunity of further collaboration.

#### • IT Issues - drama to teach information technology values and ideas

As a member of the ACCE 2008 study tour to the NECC2008 conference held in San Antonio, Roland was approached to be part of a leadership symposium. As a member of the Australian contingent, he had the opportunity to represent the views of our IT educators whilst engaging with ISTE issues about the standards of teaching and learning.

The information technology activity that he conducted for participants wove together elements of drama and technology. The activity was built around the simple idea of creating a small production that communicated the message behind a key IT issue. The play was recorded using an OLPC webcam or small digital camera and

acted out using Australian hand puppets. The activity developed by Roland is part of the collection of VELS ICT assessment tasks on the VCAA website. It challenges the notion that embracing the arts in our IT classrooms can only be limited to visual images.

**•Open education to innovate and explore**

Long before the announcement of Ultranet, Roland had already begun tests to implement an intranet at Westall called Moodle on a server built from scrap and spare parts. Importantly, the college can use this technology for all the different languages that are taught at Westall. From being the first school in Victoria to deploy Moodle across the school, he now supports the engagement with learning technologies and is engaged with local issues of ownership, freedom and control over technology in the classroom.

Roland has done the same with the school's next program, to deploy a laptop program for their students. Working with student technicians he has adapted ultra-portable and cheap computers using the Ubuntu Linux desktop to create a robust wireless netbook solution that will be deployed in 2009. The computer image that he developed for this is freely available for download online.

Last term Roland began some experiments with the notion of building a cheap interactive, wireless whiteboard system. Following some instructions on the internet to build an IR pen and using some open source software, he helped to build an ultra cheap interactive whiteboard system that enhances a traditional projector at the price of a home-made IR pen and Wii remote controller. Importantly, he then worked to share the home-made pens and technology on the Australian IT mailing lists and his blog.