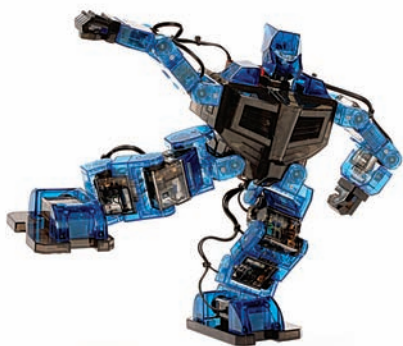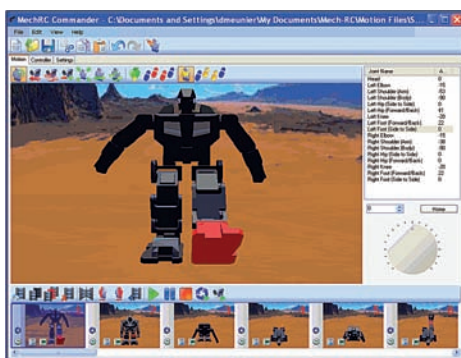# MacICT program teaches robotics

What do Bee-Bots, Pro-bots and Ed-E have in common? They're programmable robots, toylike but the real thing – robots that students can program to carry out sequences of instructions

Ed-E can be programmed to do complex dance sequences, including back flips

Programming is done using a simple drag and drop interface

Personalised Bee-Bot becomes a Flybot

Early start with Bee-bots

During 2008/2009, Macquarie ICT Innovations Centre (MacICT) developed and offered professional development courses for teachers interested in or already using the entry-level Bee-Bot in kindergarten and primary classes.

Bee-Bots can be used in a variety of subject areas including maths, art and HSIE. These engaging 'critters' are an intriguing way to encourage the acquisition and consolidation of multi-literacies in younger students, who are actively engaged while exploring the capability of the robots in problem-solving contexts e.g. moving around a path, or climbing a slope.

This year MacICT has expanded its robotics program through a project involving more than 50 teachers from 14 schools in an open-ended online professional learning network (PLN). This is providing ongoing support for teachers in their own classroom or across the PNL.

A blog, established and monitored by MacICT – http://mybeebot.WordPress.com/welcome-beebot-parents/ – is a meeting space where educators can swap ideas and experiences.

In the MacICT program, teachers and their students identify and use equipment including digital cameras, computer-based technology, materials and other resources. Schools received professional development in Web 2.0 tools, using blogs, digital cameras and confidence building through use of the connected classroom.

In the classroom, some teachers focused on numeracy from the number strand. Students recognised, described and continued patterns that increased or decreased; gave and followed simple directions and described position using everyday language.

One grade worked as a team to integrate HSIE and CPA to develop mapping skills. Students at this school used a variety of materials, including recyclables, to build their own Bee-Bot landscapes and programmed the robots to move around set courses.

Many incorporated CPA, designing jackets for the Bee-Bot collection, while class resources such as Lego, blocks and boxes were used to build Bee-Bot homes when science was integrated. One teacher reported that students had choreographed a Bee-Bot dance in CPA.

ED-E has the moves

At the top end, ED-E is a fully assembled, programmable humanoid robot designed to help students learn about programming. He (or should it be It?) has 17 motors capable of 180 degrees of movement. The software is easy to use, there are audio files and 100+ built-in motion files and a fully programmable remote control. Programming is done via computer using a simple drag and drop interface.

The concept of the ED-E project *So You Think Your Robot Can Dance*, is to incorporate the skills of students across the curriculum areas of music, dance and computing studies. Students compose an original digital music track, choreograph a dance to the music, and then program ED-E to dance the routine.

North Sydney Girls High School used challenge-based learning in the invitational ED-E Dance Off, coordinated by Jane Mullen from MacICT in Term 2 this year.

Six Year 8 classes attended master classes in dance, music and programming that equipped them with the skills required. Roles were allocated in groups of three, each tasked to document the process they followed and their reasons for tackling the tasks the way they did, using the school's blogEd.

The goal was to program ED-E to perform a dance routine for two minutes. Each group performed their dance in time with video of ED-E in a final Dance Off.

10 robots were shared across each class of 30 and the master classes, sound and video recording, dance moves, programming and blog entries had to be completed within a school day. At the end of six days, the students were able to demonstrate a sophisticated display of multidisciplinary talent.

"Ed-E was really fun to work with, and could do really cool moves."

The next iteration of the project is being implemented with a group of male hiphop dancers at James Busby High School in Sydney's western suburbs. A group of students ranging in ages from 13–18 years is choreographing a dance incorporating hip-hop, crumping and other dance genres. When complete, blue screen technology will be used to film the dancing robots for live on-stage performance.

Keepad Interactive, an industry partner of MacICT distributes Bee-Bot, Pro-Bot and ED-E robots.

http://www.keepad.com.au
http://web1.macquarieict.schools.nsw.edu.au/