

®LEGO, the LEGO logo, DUPLO, MINDSTORMS , ROBOLAB and RCX are trademarks of the LEGO Group

4 Programming the NXT robot using the computer:

- Programming movement , graphics and sound on the NXT, downloading and execute
- Challenge – Degrees and distance challenge
- Challenge - Light and lines challenge

5 Robotics Dance – Programming, decorating activity

- Add-on extra motor for head / tail movement
- Parallel programming of dance actions to music
- Decorate the robot
- Dance demonstration – robots dancing

OR

6 Robotics Challenge

Students will undertake a programming challenge based on distance to navigate their way around a treasure island to find treasures and avoid danger. This task includes programming, thinking and mathematical skills.

7 Rescue Robots

Analysing the tasks, sequencing
Calibration of light sensor, line following
Logic and tactics
Engineering
More advanced programming possibly using RoboLab 2.9

For available dates for your sessions please download my “Available Dates” Calendar from my website at

<http://www.techxellenttraining.com.au/TechxellentCalendar.pdf>

View other Student Incursions and Staff PD at : <http://www.techxellenttraining.com.au>

** The Scope and outcomes will be affected by factors such as the students existing computer skills, year level and length of the session; however this overview represents a typical outcome from a full day session with one class. Shorter sessions will include components from each section.*



TechXellent



Training



Solutions

ABN 28600732584

Sue Inness

Diploma of Teaching,

Certificate 4

Workplace Training & Assessment

Staff Training- Computer applications, robotics, engineering systems, course writing.

Student - Extension programs, incursions, in-school projects.

Mobile : 0414184033

Phone/fax : 03 9772 5054

<http://www.techxellenttraining.com.au>

sue_inness@bigpond.com

Scope of Incursion:

For : Excellent Robot Dance Session With Introduction to Robotics Component / Introduction to Robotics / Robotic Challenge/ Rescue

1 What is a Robot?

- Machine / robot?
- Robots we know (film/ literature)
- How does a robot respond to things ?
- Inputs and outputs, sensors
- Programming – precise instructions
- Simple game with student dressed in robot costume.

2 The LEGO NXT Robot

- What's plugged in – Inputs and outputs: light sensor, touch sensor, sound sensor, Ultrasonic sensor, degrees sensor. Outputs : Motors, graphics, sound.
- Investigation – On Board “Try Me “programs – input→ instruction→ output.
- Activity -On Board Program Investigation – steering robot around a course using a torch and the light sensor.
- Reading sensors – Thresholds and ambient conditions.
- Degrees and distance investigation . The relationship between angle of rotation and linear distance relative to the circumference of the robot's tyre.
- Sample Dancing robot program with sound and graphics – sequencing.

3 Basic On- Board Programming of the LEGO Robot.

- 5 step program: Ultrasonic sensor , looping program, timed reactions