

## BEST IN SHOW – ROBO DOGS



### RoboDogs

**Teams build, program and decorate a robotic dog.** The dog has to parade ( robotically, without human assistance) along a walk-way 1m wide by 5 m long , up and back and stop ( white and black tape border to walk-way). The doggy robot must exhibit some “doggy” behavior eg - tail wagging, leg lifting, ears up, barking, etc- is up to the kids and **it must look and behave like a dog as much as possible.**

The team leader will introduce their team members and pup and describe its' breed, skills and temperament and set it along its' way on the run-way. The teams' posters will also be on display for other teams to look at

**PREPARATION** - In preparation and by way of planning, the students must give their team and dog a name and create posters of **MY DOG**: their robotic pup, why it's the best in show, it's breed features and robotic features should be on the poster. Posters will be displayed on the day for other teams to admire ( please involve your art teacher in this)

**Other Activities** – Literacy: Write a story about your dog's adventures

Debate – Could robotic dogs ever replace real pets?

What are the advantages / disadvantages of a robotic dog – V – real dogs?

Science- How should you look after a dog? What do they need?

**Web**

<http://research.usc.edu.au/vital/access/manager/Repository/usc:1911>

<http://news.smh.com.au/world/robot-challenges-dog-as-best-friend-20080302-1w83.html>

<http://www.melbpc.org.au/pcupdate/2209/2209article15.htm>

## ROBOTICS EQUIPMENT REQUIRED :

LEGO Mindstorms Education NXT sets and NXT software ( or RoboLab 2.9)  
Or LEGO Mindstorms For Schools RoboLab sets and RoboLab software

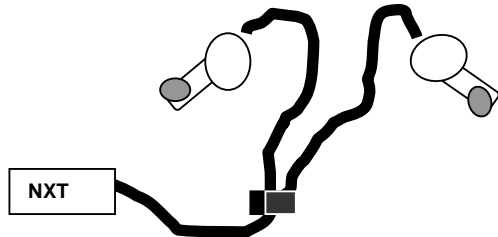
## PREPARATION

- Sort out your groups
- Look at the art equipment – what have you got? What do you need?
- Plan your dog , research the breeds characteristics
- Draw a diagram of your dog. Show your plan to a teacher- Is it possible? can you make it?  
Do you have / learn the skills or equipment?
- Use a basic NXT / RCX robot and modify/ build, decorate and program your dog robot

## DESIGN & PROGRAMMING CONSIDERATIONS

- Stability
- Maneuverability
- Strength
- Decorations must not interfere with the operation of your dog.
- “Dogginess” -behaviour and characteristics
- Programming
- Additional motors –for extra movements
- Remove what you don’t need (sensors) – don’t make it too complicated
- Can you reach the buttons?

At right – 2 NXT motors need 3 hybrid connecting leads



## ART/CRAFT ITEMS – A SELECTION REQUIRED (Zart Art – Box Hill)

Colored felt tipped markers

Scissors

PVA glue

1 x glue brush/spreader

Celulose tape / clear packaging tape

Blu Tack

Coloured Foam sheets

Coloured chenille stems

Pom Poms

Curling Ribbon

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Paper Clay

Joggle Eyes ( extra Large)

Felt

Staplers & staples

Paper fasteners

Low temp glue gun  
 Poly balls  
 Polystyrene blocks  
 Coping Saw  
 Armature wire/ florist wire & wire cutters  
 Self stick Velcro dots – both pieces  
 Crepe paper,  
 streamers,  
 cellophane,  
 Cardboard,  
 Coloured Cover Paper,  
 pop-sticks, satay sticks,  
 metallic foil and cardboard,  
 Alfoil,  
 feathers,  
 Balloons  
 Coreflute

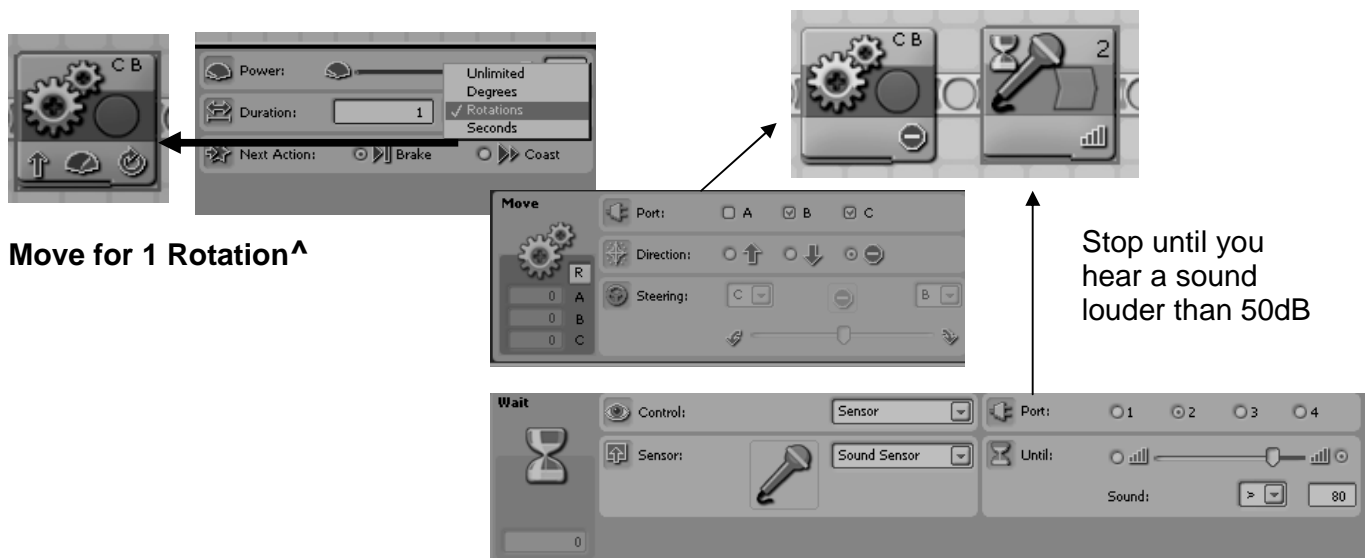
More information and photos of various decorated robots can be found at :  
<http://www.techxellenttraining.com.au/index.html>

## NXT PROGRAMMING HINTS

**Wait for push / time gives you time to re costume the robot**



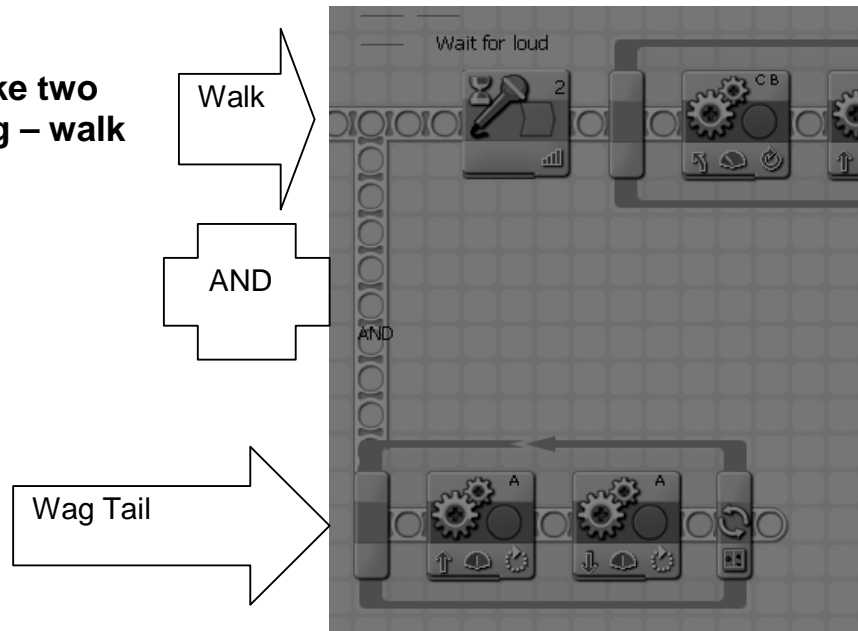
**DURATION: Always program a time or wait for an action, this includes stopping.**



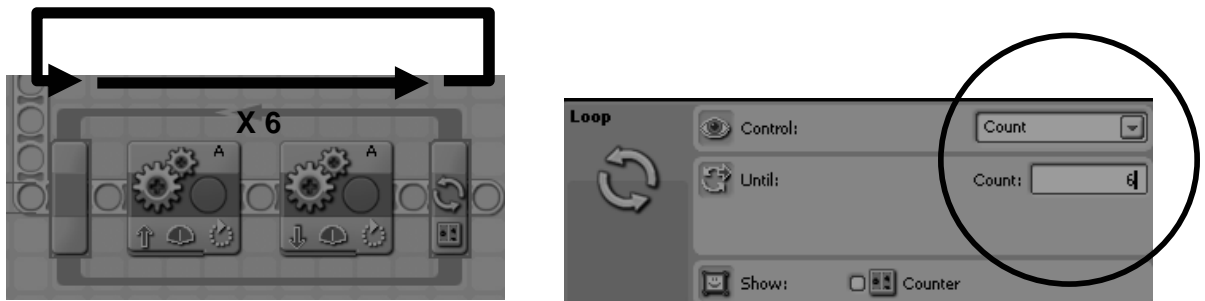
Move for 1 Rotation^

Stop until you hear a sound louder than 50dB

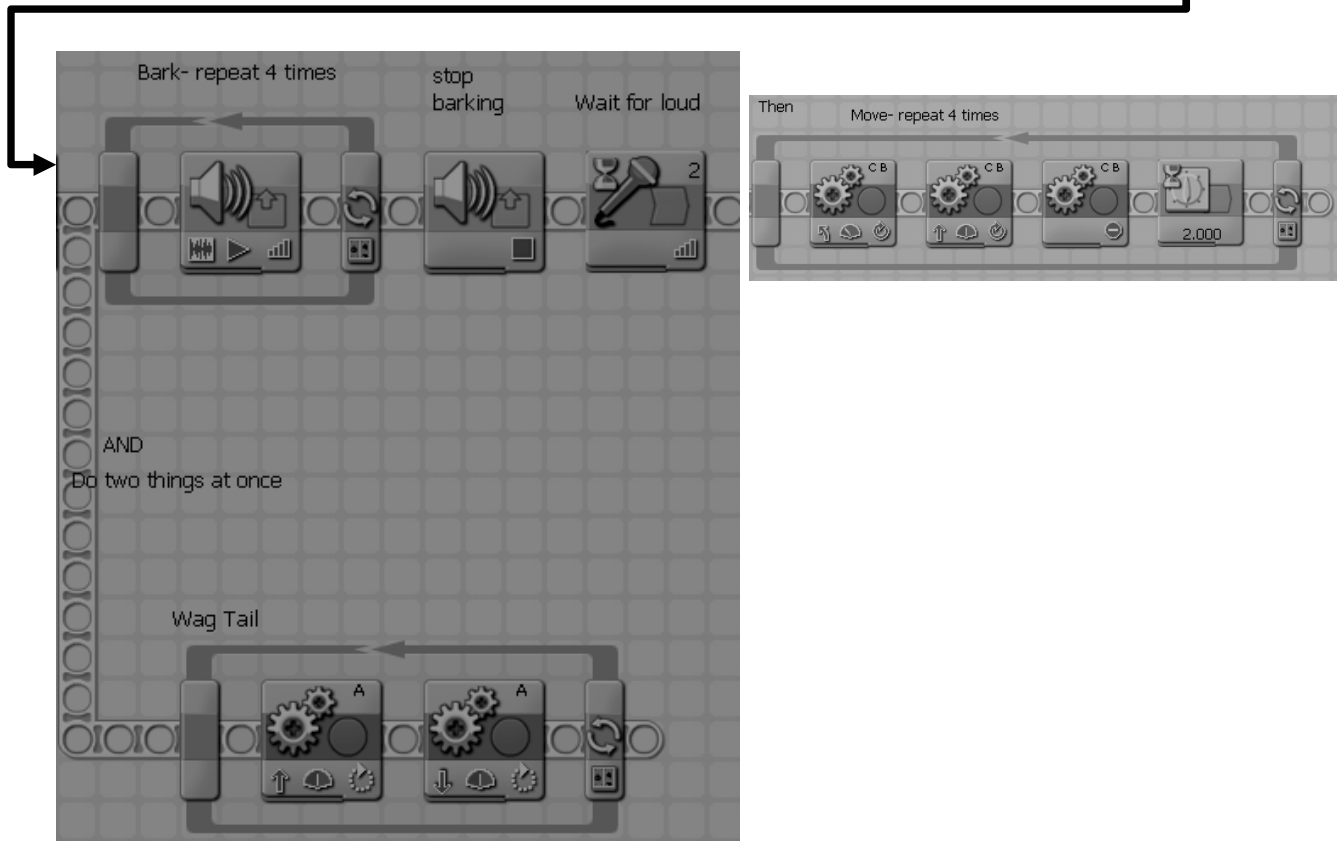
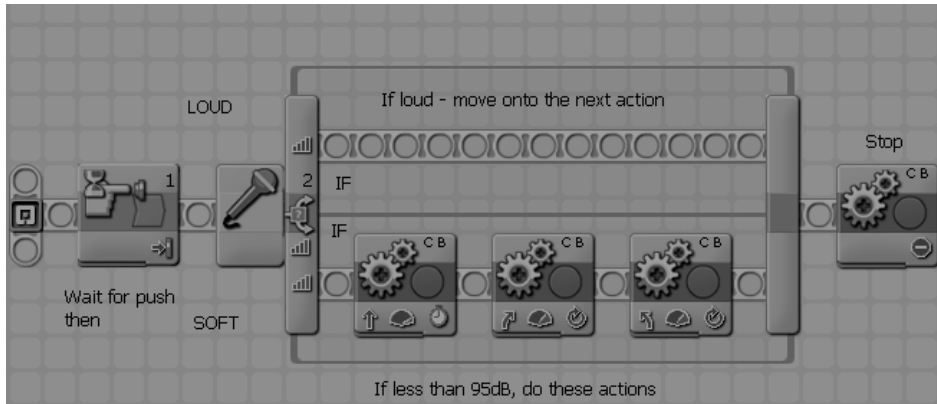
Use a TASK SPLIT to make two things happen at once, eg – walk and wag tail



Use numbered loops to make a short program happen for a number of repeats then move on.



# Sample NXT Program



<http://www.techellenttraining.com.au/Conference%20Papers.html>