



Finalist 'Best Coding Project'

Name: Leigh Harvey

School: Wanganui Intermediate School, Whanganui

Name of coding project: RubbishBot

1. Describe the coding project that you want to be considered for the award?

My class and I wanted to make a robot from an Arduino Uno Microprocessor. After some investigation one of the students suggested that since our rubbish bin looks a lot like R2D2 (The domed rubbish bin type) We would make that into our robot. It involved researching, working out costs, teamwork, co-operation and communication skills in order to carry it out.

2. Why did you choose to use this project?

We chose this project in order to find out more about the Arduino series of microcontrollers and how they worked. The idea of a practical programmed rubbish bin, using a microswitch in the lid was highly motivational to the students. We had some very limited experience with Arduino, making lights flash, operating a push button and this seemed like the next logical step.

3. How did you implement and use this project?

The first step was to get the external features right. We looked up the dimensions of the original R2D2 online and then divided that by the circumference of our robot. Next we cut the bin to length and made stickers of the graphics to scale. Once we had done that we made a wooden bottom for the bin and attached an Arduino Uno R3 microprocessor. Since we already knew how to make lights flash we attached five L.E.D's and programmed them to flash for random lengths. After some investigation we discovered a vacuum forming machine in the school so we made a cast and made legs from that which attached with servos so the body could pivot at the shoulders. Lastly we attached geared motors to the feet which were powered by an H bridge.

4. What outcomes has it achieved for you and your class?

The project was highly motivational to the students. At first when looking at the big picture it seemed too hard, but once we broke it down it became easier. A lesson which has stuck with them. It also helped them to see that as the teacher I was learning along with them, something that helped them see that education is a process or journey. As the project progressed the conversation changed from "Is it finished yet?" To "What is the next step?" The programming itself became a lesson about the way the human mind worked. At first the programming seemed daunting and confusing, but the more we tried (and sometimes failed) the easier it became. The class have asked if we can add an ultrasonic sensor and have even researched adding a PIR sensor (something I had never heard of before this) in order to make it more responsive to people and the environment around it. To which I have said a resounding "Yes!!!"

To check out our robot in action (almost completed at this stage) check out

<https://www.youtube.com/watch?v=cYjWAV4Pphk>