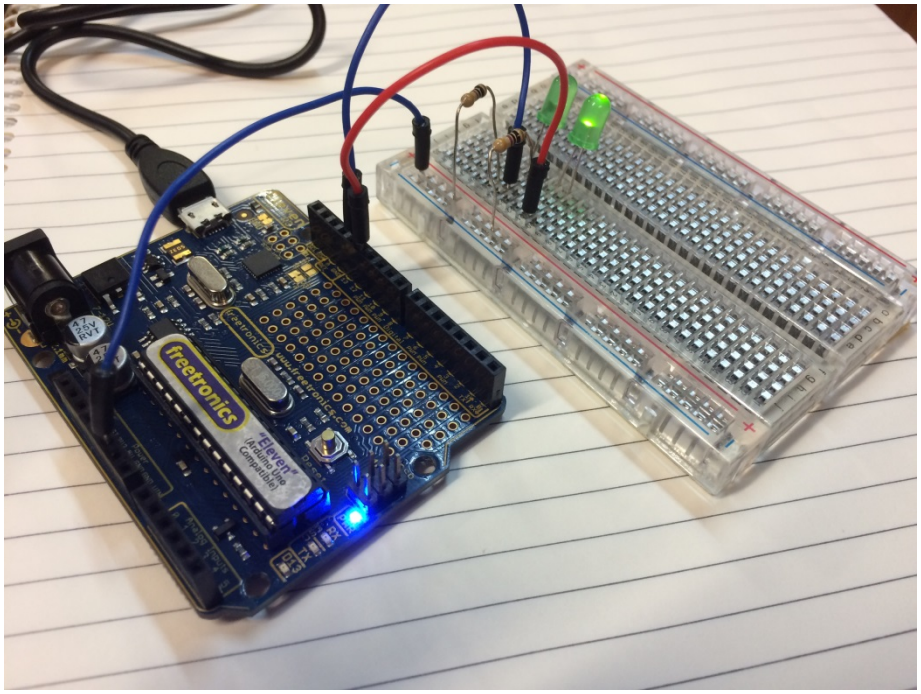
STEM at Keysborough College



KEYSBOROUGH COLLEGE

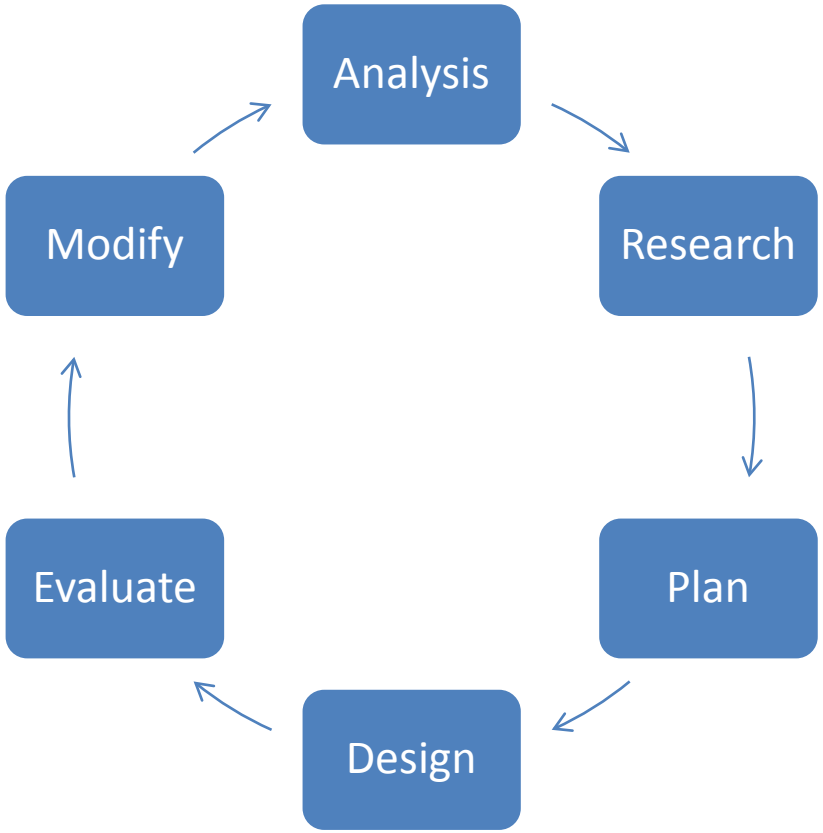
Context

- Select entry Year 10 science stream
  - 3x75 minute “Core Science” (Chemistry, Physics, Biology)
  - 3x75 minute “STEM Projects” (Robotics, 3D printing (OpenSCAD), Programming, Bridge building and engineering)

KEYSBOROUGH COLLEGE

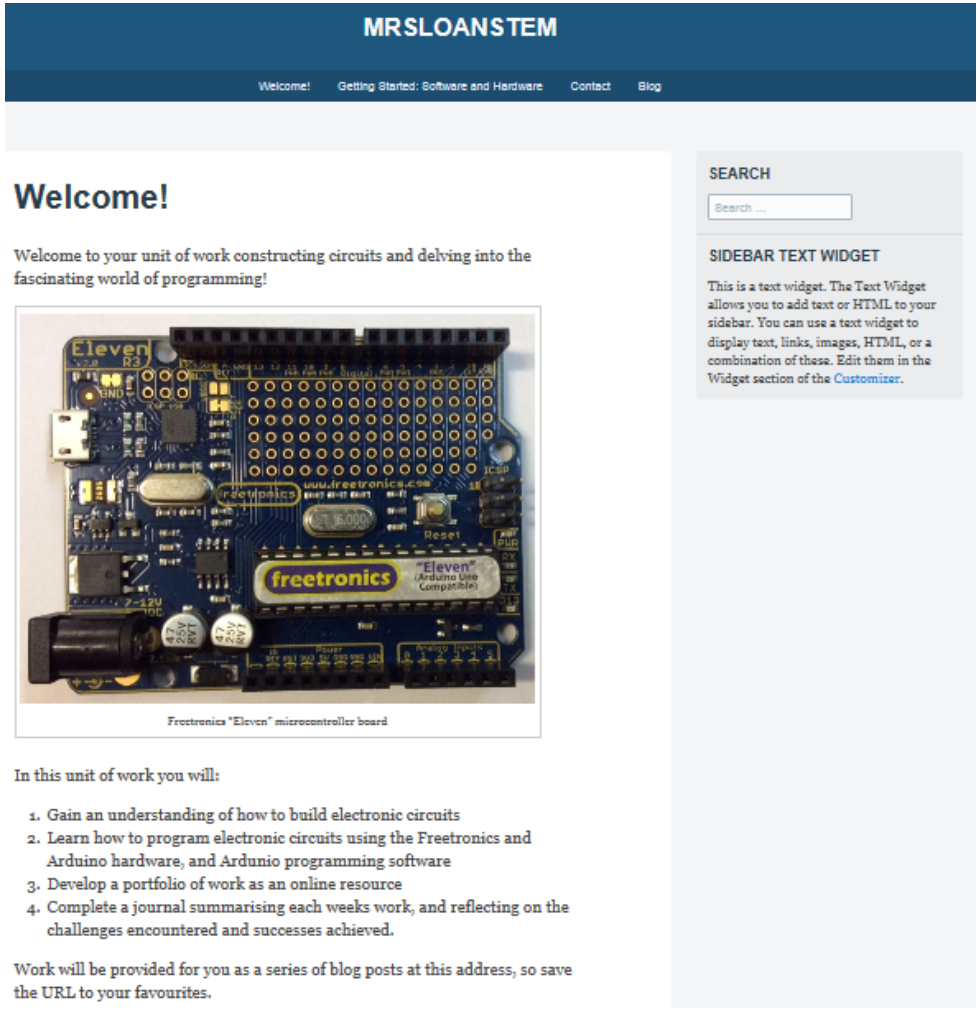
STEM Projects

- Class work is based on a reflective design cycle



Resources

mrsloanstem.wordpress.com



Useful websites / Resources

- Arduino reference and playground – great resource for Arduino code examples and pre-written code.
- Spark fun – General electronics information and examples of code.

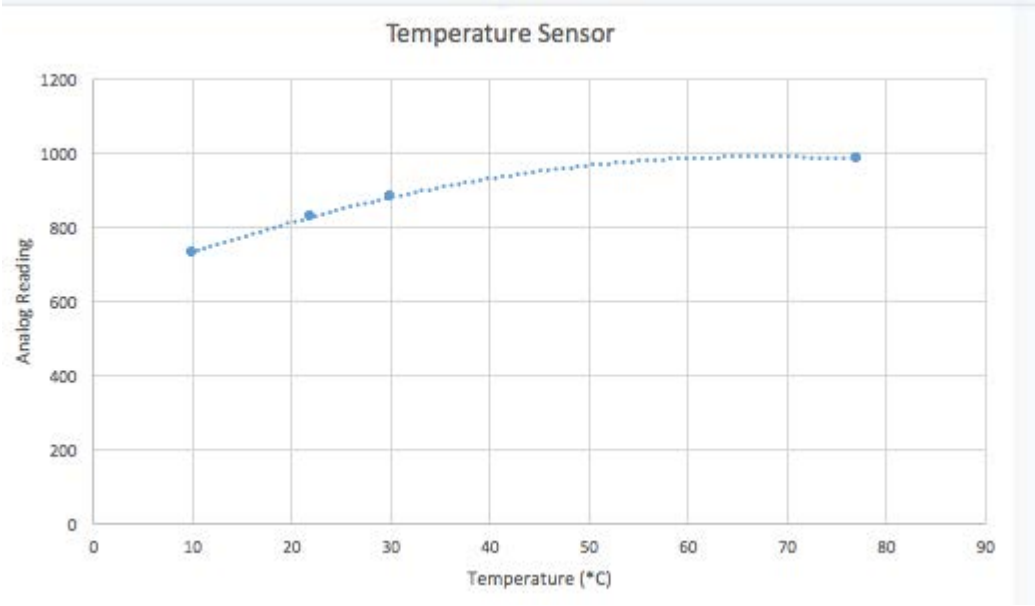
Student Work Example 1
Morse Code Machine

- Lesson 13 from handout
  - Students have previously worked on writing case switches and void functions
  - Students have completed a research project about Morse code
- Allows for a high degree of customisation – blink rate, number of LED's, letter change, word change
- Assessment – Code, Morse code competition
- Extension – Use of serial monitor to call up data from sensors

Student Work Example 2
Temperature Sensors

- Developed to complement mycoremediation work being completed in Core Science subject.
- Students

- design and build a simple thermistor based temperature sensor
- write a program based on their prior knowledge to record the analog reading
- calibrate the sensor using various temperature water baths



Extension work:

- Modification of code to display temperature range using case switches.
- Modification of code to give direct readout of temperature in ^{o}C using Steinhart-Hart equation or a library.
- Construction of light and moisture sensors