

# 3D Printing, Raspberries and Microbits:

## Engaging Science and Engineering Students into Coding and Prototyping with Physical Computing

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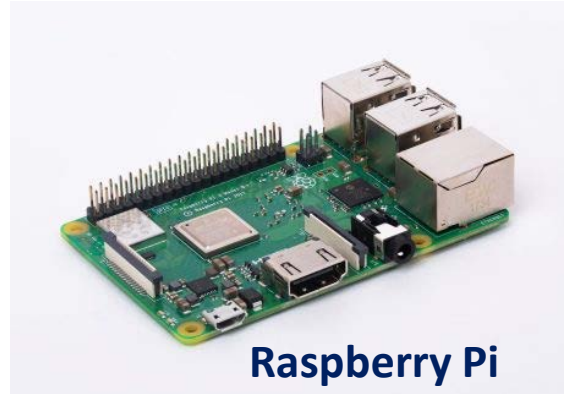
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# Physical Computing

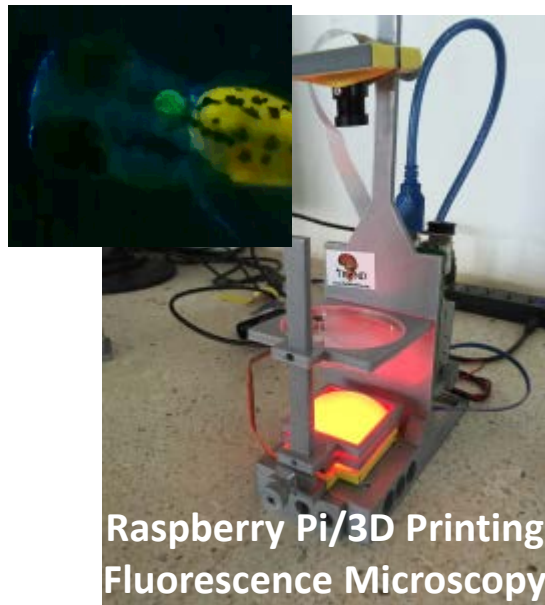
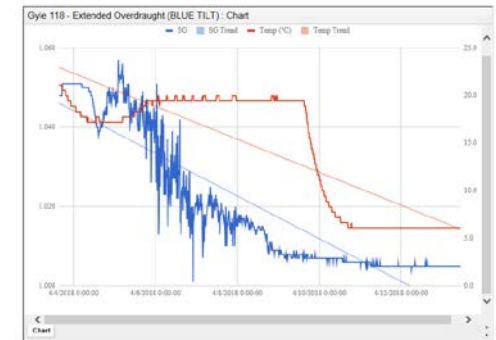


BBC Microbit Robot

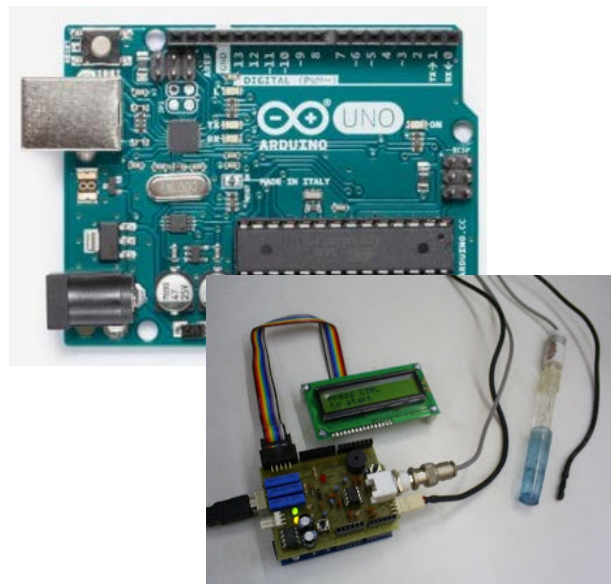


Raspberry Pi

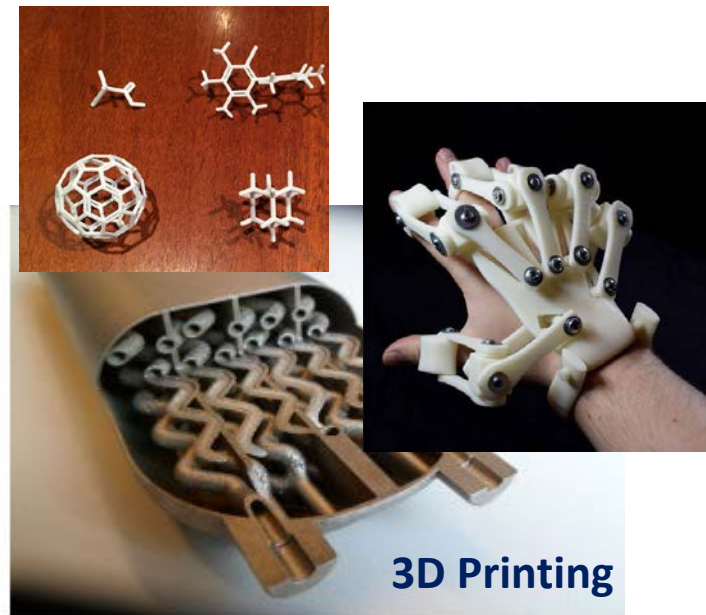
## Stu Brew Process Control



Raspberry Pi/3D Printing  
Fluorescence Microscopy



Arduino pH Meter

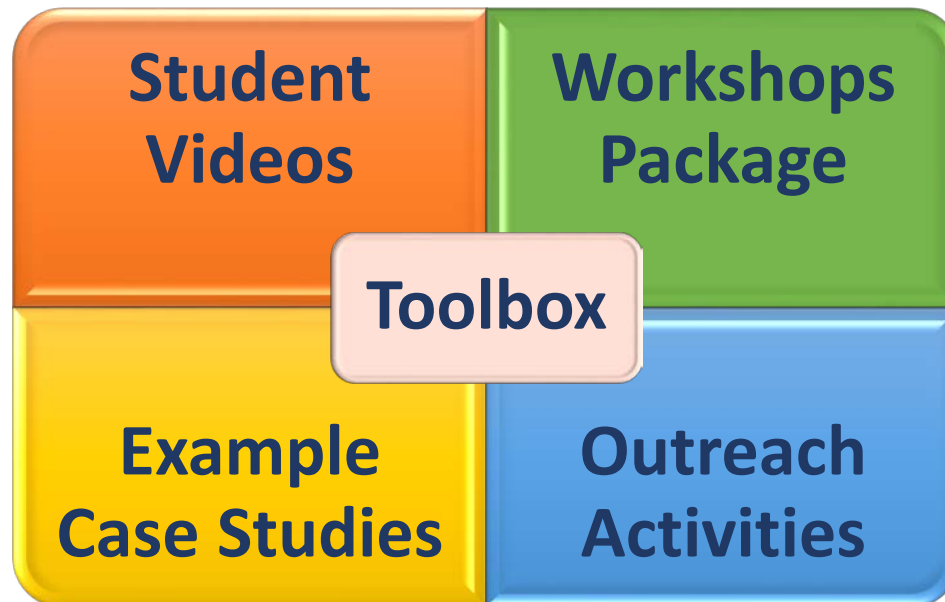


3D Printing

Cross section flow reactor


# Project

- **Strategic Innovation Fund, ULTSEC;**
- **Aims:**
  - Introduce Physical Computing as a tool to teach and engage students into coding, prototyping and engineering design skills;
  - Widen access to engineering and science students from non-computing or non-electronics background students;



# Workshops

- **Student videos** used as workshop primer;
- **Comprehensive package:**
  - BBC Micro:bits
  - Raspberry Pi
  - Sensors
  - Motion control
  - 3D Printing
- **Themed:**
  - Environment
  - Fitness
  - Bionic Hand
- **Student Feedback:**
  - Surveys
  - Focus Groups



**BBC Micro:bit**  
**JOIN US AND CODE**

Participation Certificates Awarded

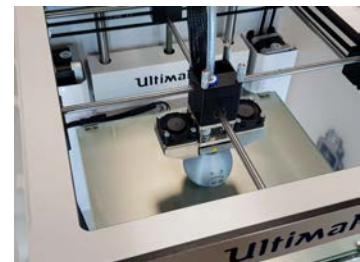
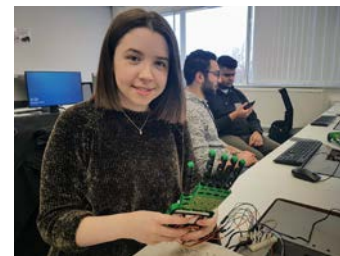

Two exciting sessions, aimed at any students who want to learn how to build some exciting projects using the BBC Micro:bit! Come and learn how to use the BBC micro:bit to sense the environment and measure things, and how to harness the BBC micro:bit Bluetooth capabilities to interact with other devices and record data.

**No prior experience necessary!**

**Topic:** Build an Environmental Sensor Kit!  
**Day:** Tuesday 1<sup>st</sup> May **Where:** C412 Merz Court  
**Time:** 4-6pm

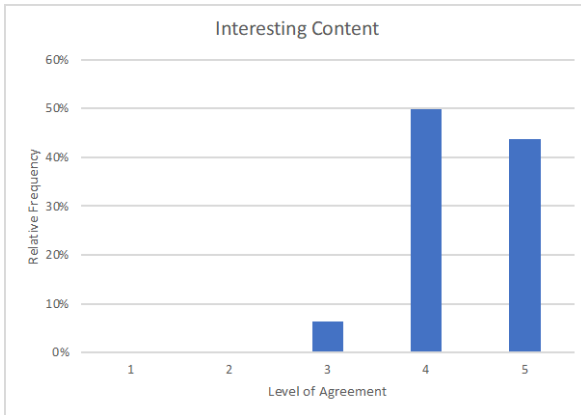
**Topic:** Bluetooth Communication  
**Day:** Tuesday 8<sup>th</sup> May **Where:** C412 Merz Court  
**Time:** 4-6pm

[To Register Click Here or scan QR code!](#)

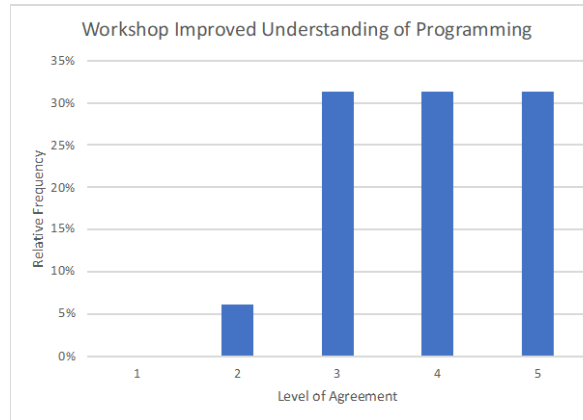


# Student Feedback

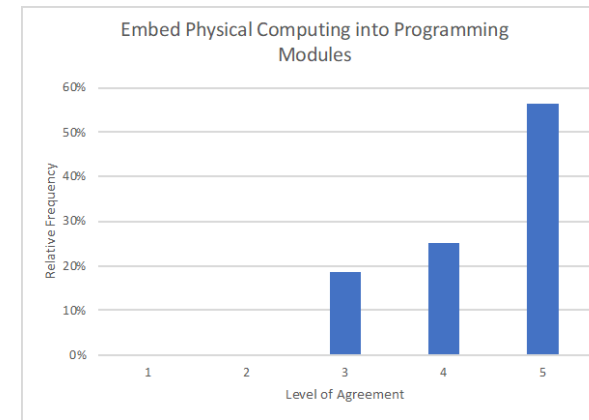
## Interesting Content



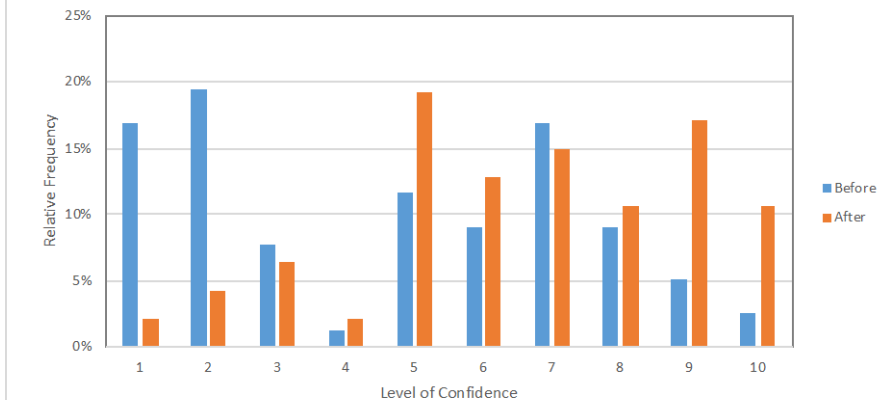
## Improved Understanding



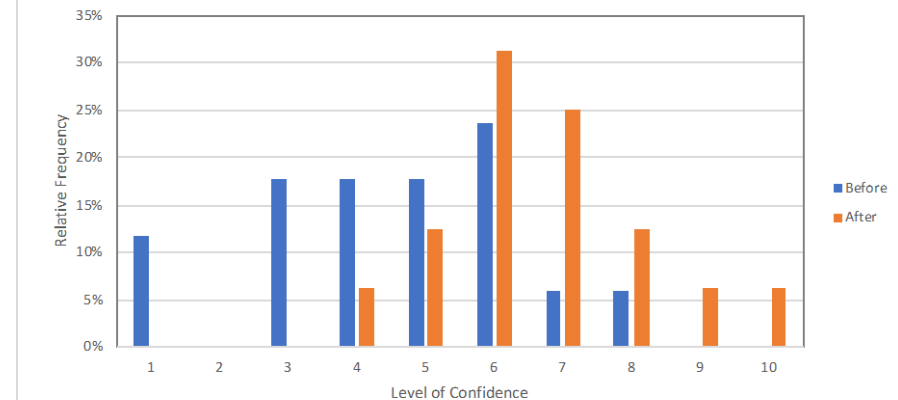
## Embed into Modules



## Programming Confidence - Microbits **4.6 ⇒ 7.3**



## Programming Confidence - Raspberry Pi **4.5 ⇒ 6.7**





# Student Feedback

- 
- Most Interesting Parts:
    - It seems like a really simple-to-use program;
    - It introduces basic programming skills to novice and makes it easy to understand;
    - Sensor: Ability to work with it on computer and seeing it displaying in the board;
    - Found programming the micro:bit to count calories interesting as the application has been used in so many devices;
    - Programming the robotic hand - provided a good visualisation of how the coding works allowing better understanding;
    - The display aspect feels like magic;
    - Practicals and challenges.
  - Other comments:
    - Thank you for organizing this. It was fun.