Lesson plan: Session 4

Measuring our Climate

Overview

In this session learners will use sensors on the micro:bit to measure light and measure voltage travelling between 2 pins to help determine moisture levels in soil, making connections to water conservation.

60 minutes

Learning Outcomes
- Connect Soil Moisture Tester and Light Sensor to UN SDG 6 Clean Water and Sanitation
- Code and design a light sensor and soil moisture tester
- Remix these skills and apply their knowledge to solve other situational problems

Disciplines
- Computer Science, Science, Mathematics, Social Studies/Geography

Transferable skills
- Critical Thinking
- Communication
- Collaboration
- Creative Thinking
- Computational Thinking
- Design Thinking.

Resources

- CodingChange_S4_teacher PowerPoint
- m:b, one battery pack
  - speaker for remixing code
- 2 nails for each pot,
- 2 alligator clips for each pot
- Soil
- Slid container

Activities

Minds On – SDG6

- Slides 2-5 –Teachers may wish to use these slides to start discussions and research into:
  - Drinking water and waste water treatment
  - water quality issues
  - climate change impact on water systems
  - source water protection
  - further development of SDG6
    https://www.un.org/sustainabledevelopment/water-and-sanitation/
- Slide 6 – lesson learning goals
- Slides 7-10 – Code an Alarm
  - Setting the stage for coding and alarm with slide 7
  - Slide 8 shows some possible code. Teachers may wish to give students some code to get started and challenge students to complete the code as the light sensor is new, or they may wish to walk students through building the code.
  - Slide 9 highlights the bits of code used in this project, while 10 is a springboard for students making this project their own with remixing.

Action – Moisture Tester

- Slides 11-12 – Slide 12 quickly explains the role of water in the survival of plants
- Slide 13 – material list. You'll need these materials for each soil moisture tester you create.
- Slide 14/15 – There are 3 sets of code outlined to help with scaffolding the project based on the needs of your students. Teachers will need to decide upon the best way to roll out the coding piece.
- Slide 16 includes 2 short videos, one registering a dry soil, the other wet. It is also an example of how to set up your soil moisture tester.

- Slides 17/18 explain how it all works. This may be an excellent link to electricity units.
- Slide 19 highlights all the bits of code involved in this project and 20

Reflect and Extend
- Teachers may wish to use classroom plants as a real-world connection to taking better care of our water sources by being more purposeful in our watering.
- Link to complete MakeCode Soil Moisture Experiement https://makecode.microbit.org/courses/ucp-science/soil-moisture
- Additional Resources mentioned in the webinar:
    o Sustainable Living Book List tinyurl.com/y3qb4cjt
    o Micro:bit and Do your :bit challenge https://microbit.org/projects/do-your-bit/challenge/
    o Hallowe'en micro:bit activities https://microbit.org/news/