香港教育大學
The Education University of Hong Kong

FACULTY OF LIBERAL ARTS AND SOCIAL SCIENCES
博文及社會科學學院

科學與環境學系
Department of Science and Environmental Studies

2024-2025 Quality Education Fund Thematic Network - Tertiary Institutes

Progressive Development of STEAM Literacy through STEAM Education and Self-directed Learning

透過STEAM教育自主學習有序發展STEAM素養

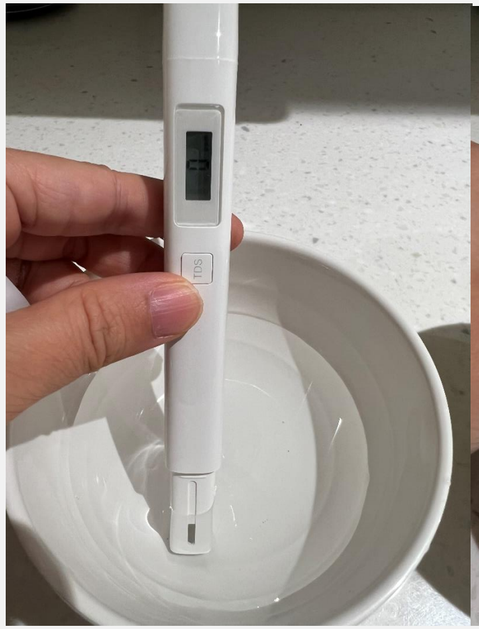
潔淨的水 - 濾水

馬頭涌官立小學

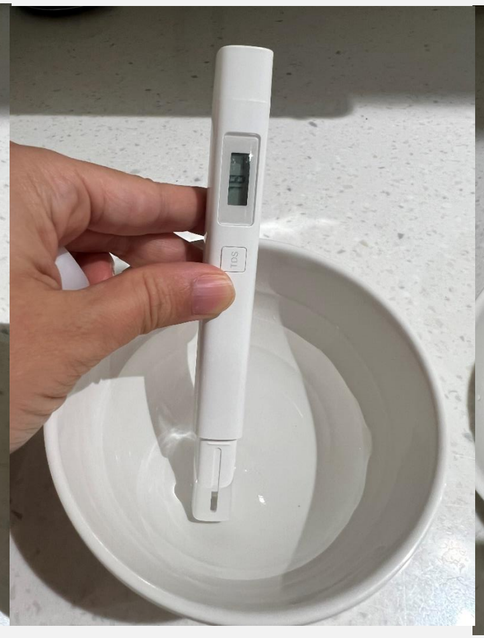
Methods

- TDS sensor (Total Dissolved Solids) 水中總溶解固體量—通過測量水的電導率得出TDS值，水中溶解物越多，水的TDS值就越大
- Turbidity sensor (with Micro:bit) 濁度—利用光學原理，通過測量溶液中的透光率和散射率來綜合判斷溶液濁度情況
- Micro:bit light sensor- 數值就越大，代表透光率越高

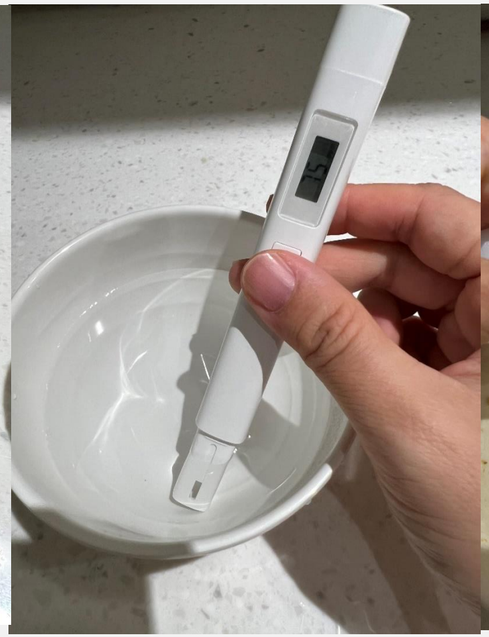
Testing 1- TDS sensor



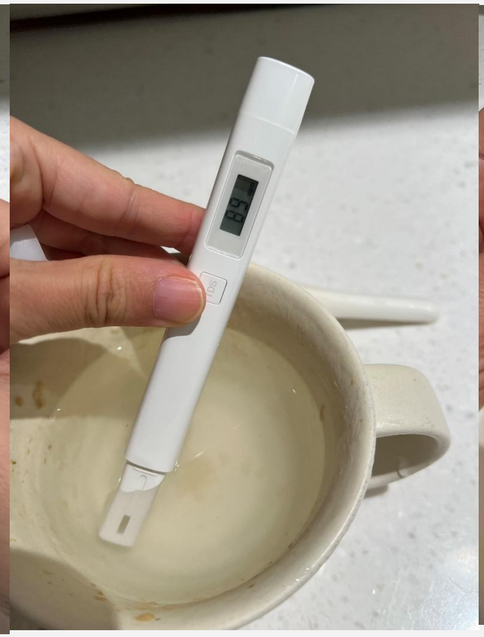
Distilled Water：0



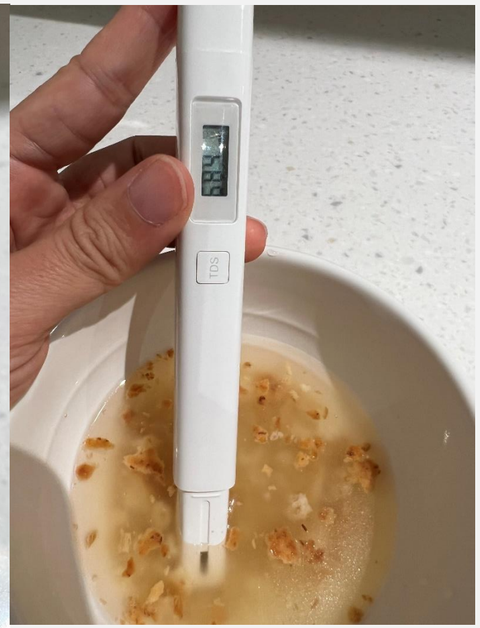
Tap Water：78



Water from Hot water machine)：75



Tap Water + Oats：89

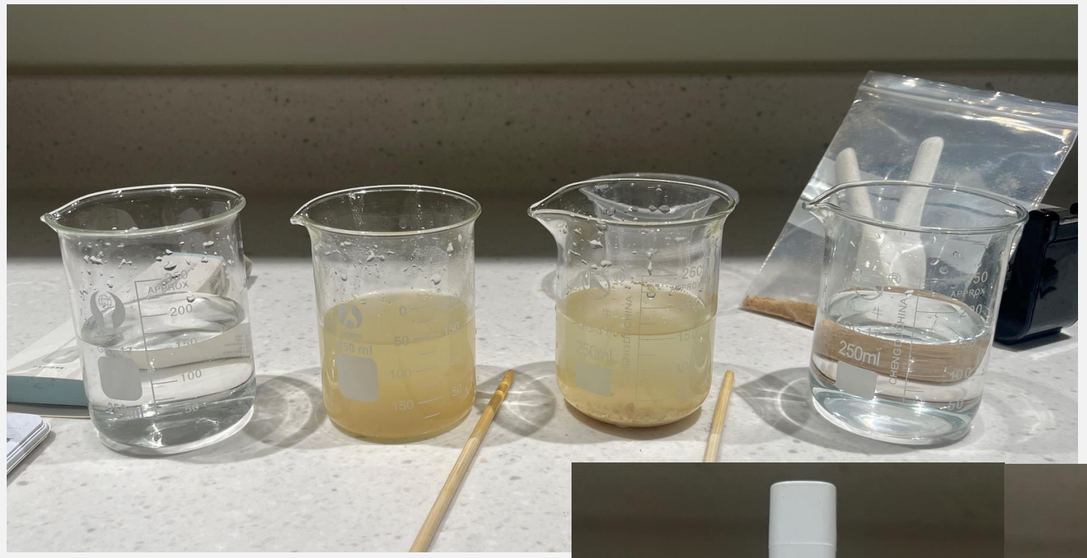


Distilled Water + biscuits：684

Testing 2 – Different types of sensors

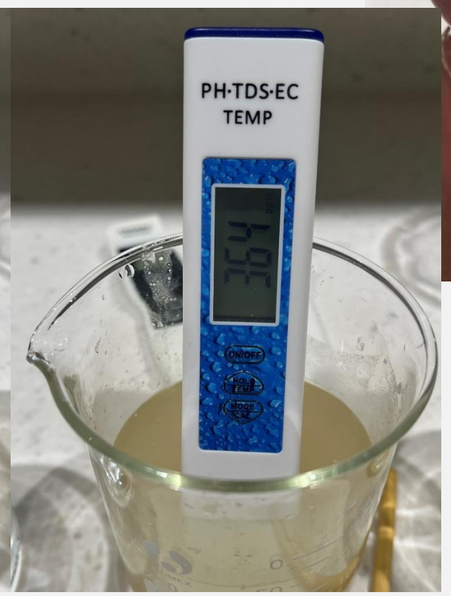
150ml						
Condition	**MI TDS**	**TDS EC Meter**	**pH TDS EC Temr**	**Turbidity (Blue)**	**Turbidity (Black)**	**Light Sensor**
Distilled Water	1	2	0	617	725	237
Distilled Water with Biscuits (filtered)	318	297	365	439	578	134
Distilled Water with Biscuits	328	310	365	567	536	143
Tap Water	81	86	113	618	734	245

TDS Sensors


250ml


TDS


TDS&EC
meter (hold)
0291
ppm
236
ON/OFF
SHIFT
HOLD


PH·TDS·EC
TEMP
ON/OFF

Micro:bit - turbidity sensor

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Micro:bit light sensor
Different Set-ups

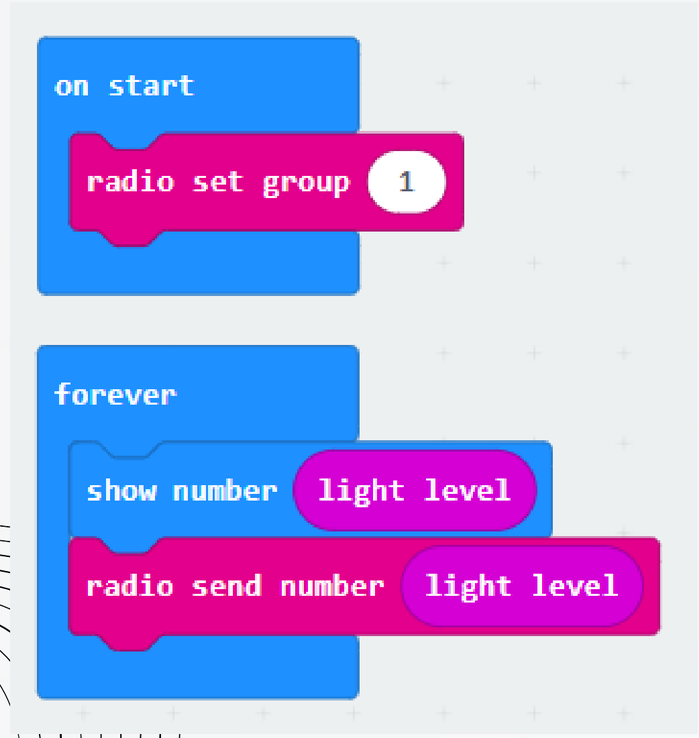
1

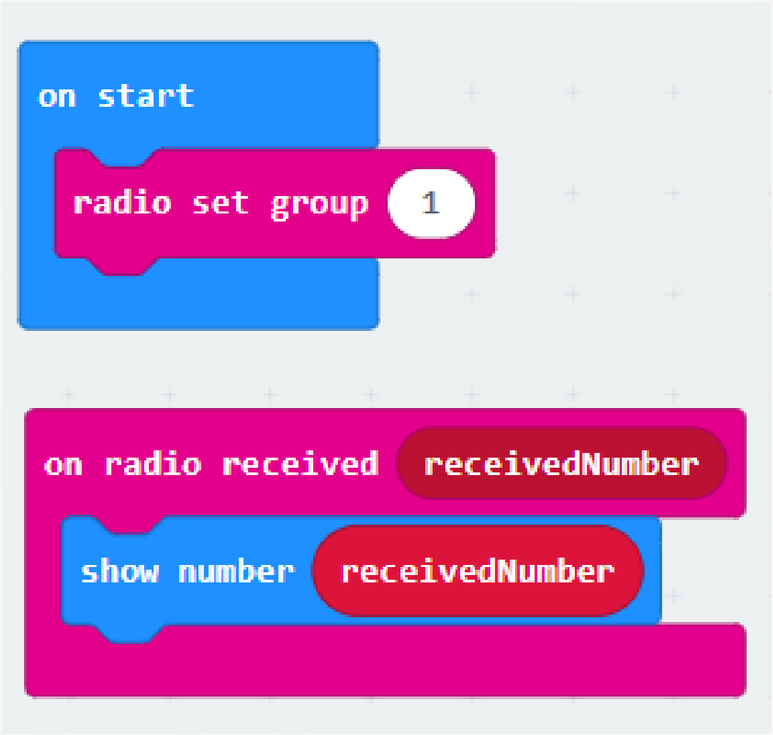
2

3

Makecode

- One micro:bit for detecting light level
- One micro:bit for showing number





https://makecode.microbit.org/S47911-66264-42946-67874
https://makecode.microbit.org/S50389-00895-44870-20792

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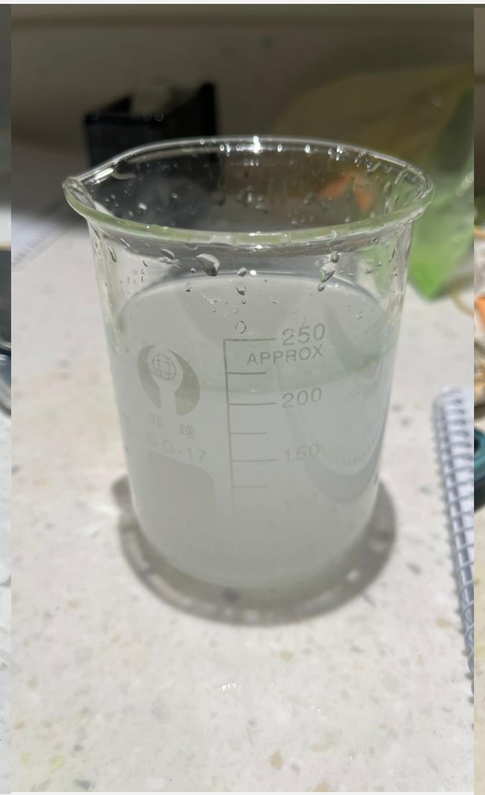
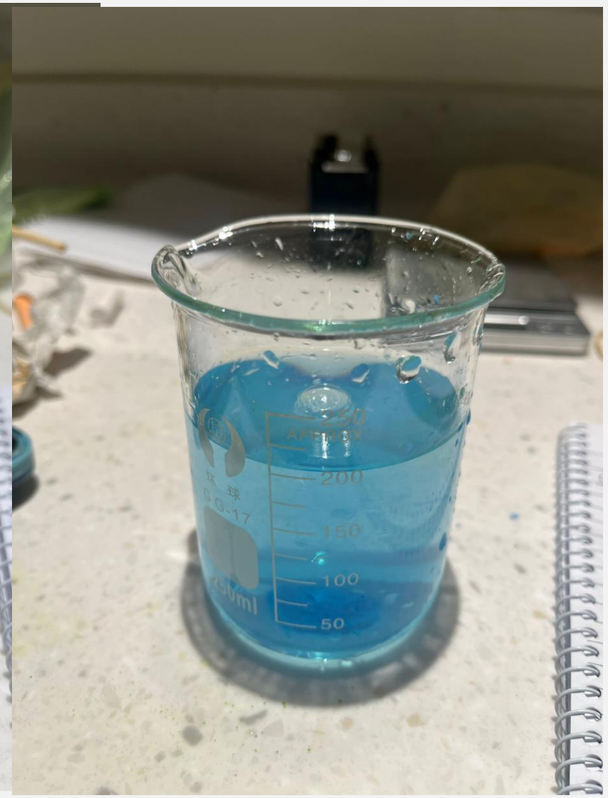
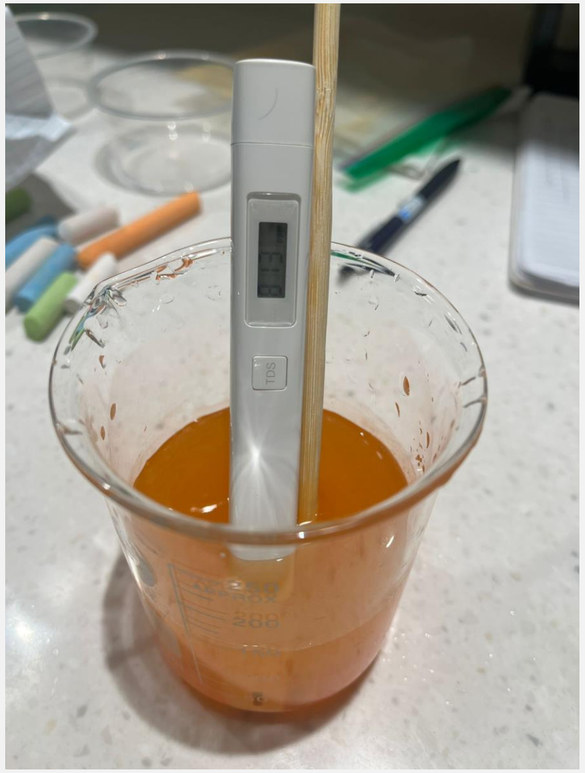
Distill Water + Chalk





Colour-
orange or green is preferred for testing



TDS sensor：813

Light sensor：0 (低透光率)