More-than-Human Making: Crafting Pedagogic Engagement Tools to Accelerate Sustainable Technology Transitions

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Conjecture

Embodiment	**Re:Play** is an **educational toolkit** designed to support and improve learning regards electronic **hardware/software repair** and **Circular Economy principles** through a series of **practical**, **hands-on** exercises. It consists of a broken **games console** which has a number of 'issues' that users' must fix through **creative** and **ludic** repair activities. As the user fixes more of the issues, **the more games** they can **play** and **the more functional** the device becomes.
Mediating Processes	The kit **'opens up the hood'** of unsustainable electronic device design and makes technology repair and circularity processes more **visible, safe** and **fun**. It aims to **empower** users by improving their **knowledge** and **confidence** and **engendering sustainable, more-than-human literacy** through **interactive creative exploration**.
Intended Outcomes	The toolkit is designed to be used **even after** the user has **finished fixing** their Re:Play game device, that is, they can **leverage** the **knowledge** they have **developed** to **reconfigure** the device and **reuse** the components. The **overarching objective** is to **accelerate** Circular Economy **skills** and **know-how** regards **electronics/digital technology repair** within **local communities** to combat e-waste, particularly that caused by IoT 'smart' products.

Context

- The Re:Play toolkit has been co-designed with and fabricated by The Making Rooms, a community makerspace in Blackburn, Lancashire which is located northwest of the UK.
- Re:Play is primarily aimed at young people who are over the age of 10 but is designed to also appeal to older users alike.
    - Age group 10-16 will require some help and supervision from an adult (18+), whether this is a parent, guardian or teacher.
- We have tested the kit in a workshop capacity in small groups made up of a mixture of adult participants including makers, designers, researchers and technologists.
- We are about to test the kit with younger participants through Blackburn's YouthZone network – a series of smaller local makerspaces which seek to empower young people in the region with physical computing and digital fabrication skills.
- The test data and insights will feed into the design and batch production of the second generation of the Re:Play kits which we intend to disseminate more widely.

The Designed Embodiments

SPACE

The Making Rooms Blackburn, UK

Physical Computing/Digital Fabrication

Vibrant, creative community

ARTEFACTS

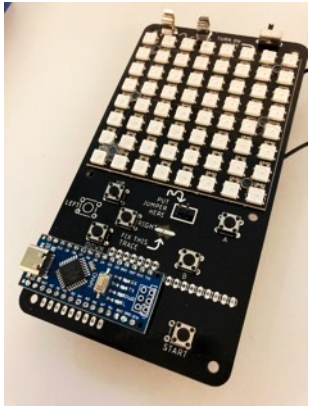
Re:Play educational toolkit

Incl. solder iron, 3D Pen, Sugru

3D printed/laser cut parts

All tools/materials are provided to fix Re:Play

Bespoke repairable PCB board



Programmable LED matrix

Mediating Processes

PRELIMINARY PROJECT

Re:Play extends LED badge solder kit

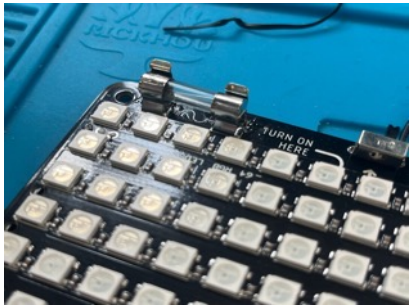
Building community repair pedagogy

Sustainable empowerment tool

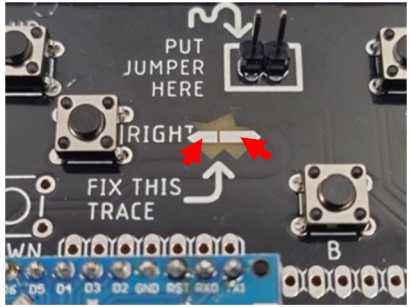
PARTS, PRACTICES AND PARTICIPATION

Step 1: Checking Power – The batteries may be uncharged. Users must check the voltage with the multimeter.

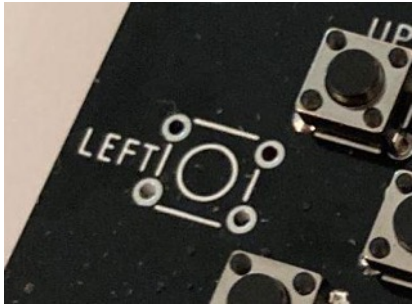
Step 2: Replacing Fuses – Users must install the fuse at the top left hand side of the console's PCB.



Step 3: Creating the Circuit – A 'jumper' must be pinned and the broken trace 'bridged' with solder.



Step 4: Soldering A Part – a spare button needs to be inserted correctly and soldered into place.



Step 5: Kintsugi– Using the 3D pen, users can fill in the groove to join the back cover's two parts together.

Workshop testing with small groups of participants – including makers, designers, researchers, technologists.