Makerspaces and Computational Thinking at The Mind Lab by Unitec
With 20 regional centres nationwide, we provide experiences in developing digital fluency that works across sectors, regions and deciles.

**Over 1700 educators**

**NZ’s Largest Postgrad Programme**

**60 CREDITS**

**PART TIME**

**32 WEEKS**
Our Students

- Our students are in-service teachers from all subject areas
  - They do not necessarily normally work with ICT
- We introduce them to makerspace-style activities, integrating hardware, software and creativity, that can be used in their own classrooms
Makerspace Dimensions

There is a distinction between making (as activities), makerspaces (as communities of practice within a physical space) and makers (as the identities of those who participate). Thought needs to be given to all three of these dimensions when designing makerspace activities for the tertiary learner.

APA
Preparing for the Now/Future

Maker **Communities**
Sharing and questioning together
F2F, G+ Communities, Collaborative
OneNote, SharePoint Communities,
Facebook groups...

Maker **Activities**
KC’s and 21CS’s (ITL Research Rubrics)

Maker **Identities**
Problem solvers, Lifelong learners, Collaborators, Leaders, Risk takers with Growth Mindset.
Some Things That We Do

- Stop motion movies with creative materials
- 3D design and printing
- Customised design thinking process
- Programming Makey Makey with Scratch
- Using Scratch for computational thinking
- Creating MeArm robotic arm kits for students to assemble
- Programming MeArms with mBlock
Stop Motion
Stop Motion Student Video
3D Design

Pre-Design ideas:
- Adjustable height + button control (includes teacher alert button)
- Seat level rotation + trackball control
- Left handed/ right handed, fold-awayable table feature + laptop' tablet compatible
- Wheels for movement
- No seat-back for better posture

A modified horseshoe table. A two level table so that students can keep their books and pens under the table and don't get distracted while listening, but easily accessible. The table top is half white board so that students can write things but also have a place to put equipments, counters, journals, etc (without getting dirty due to whiteboard markers) #AucklandCentral https://www.tinkercad.com/things/4kDnW.JqYdp

I was really inspired with the 'Sweden Classroom - the school without walls.' Using sketchup as a tool to create a possible design of a learning space was a lot of fun. Here is a beginner's version of what I could create with the new knowledge I have learnt today. #sketchup
Walking The Walk

Real World Problems
- Are experienced by real people
- Have solutions for a specific, plausible audience other than the educator as grader
- Have specific, explicit contexts
- If students are using data to solve a problem, they use actual data

APA
Designing Content
Design Thinking Kite Model

Empathise
Define
Ideate
Prototype
Test
Reflect
DT Model in Action

https://www.instagram.com/explore/tags/mindlabdt/
Computational Thinking Means...

- Solving problems
- Applying abstraction and decomposition
- Thinking algorithmically - what’s the process?
- Thinking conceptually - what’s the model?
- Understanding how things repeat and scale
- Dealing with errors

...among other things (depends who you read)
Computational Thinking

How Robots in English Class Can Spark Empathy and Improve Writing

Originally shared by Suan Yeo
If you’ve heard me talk about why Google cares about education, or why “CS + X” matters,
+Maggie Johnson sums it up in this lovely article.

To All Students: Learning Computational Thinking Will Change Your Life

Looking forward to WEEK 5: Computational Thinking.
Makey Makey Music
Robots Vs Human Teachers

Humans vs Robots

Will Bots/Al replace teachers?

Inquiry on Robots

Can we build Al without losing control over it?
Laser Cutting Robot Components
MeArm Robot Makers

Yay! Successfully built a robot. Teamwork.

+Alex Harwood +Debra Grant

#AucklandSouth #RobotBuilding
Robot Coders

mBlock

Feeling super clever having programmed a robotic arm with Helen Mora, Marion Hanson, and Nigel Carter. #Christchurch
Making a Difference

- **Maker Communities**
  - Safe environment to fail
  - Collaborative environment to share

- **Maker Activities**
  - Practical takeaways for the classroom

- **Maker Identities**
  - New experiences
  - New skills
  - Growth mindset

➔ What else could we do?
Hacking NZ Education

Would you like to raise your voice?

We are crowdsourcing ideas for NZ’s education future at http://hackeducation.co.nz

Thank you!