

THE
MIND LAB
by Unitec®

Makerspaces and Computational Thinking at The Mind Lab by Unitec

David Parsons
Milla Inkila

**Tertiary ICT
Conference**

5 October 2016 – 7 October 2016

Manukau Institute of Technology, Manukau, Auckland, New Zealand

**BRING
IT ON**

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



PART TIME



NZ's Largest
Postgrad
Programme



60 CREDITS



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

Halverson, E.R.& Sheridan, K.M. The Maker Movement in Education. *Harvard Educational Review*, 84(4), 495-504.



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


 Lisa Cuttance • In class tasks 26w

Constructionism #stopmotion #Wellington by Dianne, Emma and Lisa




Constructionism

+1 1

 Leonor White • Student blogs 11w


Help needed please...I've recorded my little video on Microsoft movie maker but I can't now upload it to here! I have the option to put on youtube but that requires a microsoft email account and I can't face having yet another password to remember! Any ideas would be appreciated!


+1 1

 Lisa Diaz • In class tasks 12w


Week 1: Lisa, Annette and Alex from South Auckland
Check out our collaborative task: What is knowledge? #1stvideoattempt

Movie Maker: What is knowledge?



 Lynley Schofield Moderator • In class tasks 26w

#Rotorua Making stop motion movies #learningtheories



07/04/2016
4 Photos - View album

+1



Stop Motion Student Video



3D Design



Andy Wilson • In class tasks

1w

#tinkercad #aucklandcentral #lifelonglearners

Pre-Design ideas:

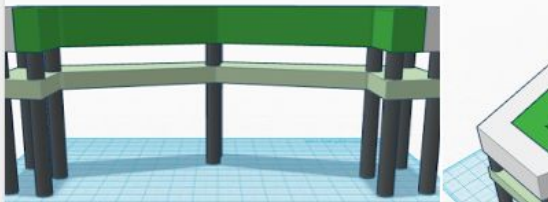
- Adjustable height - button control (includes teacher alert button)
- Seat level rotation - trackball control
- Left handed/ right handed, fold-awayable table feature - laptop/ tablet compatible
- Wheels for movement
- No seat-back for better posture



Gina Heo • In class tasks

2w

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/IKOEJqV7dp>



Jan Garbutt • In class tasks

2w

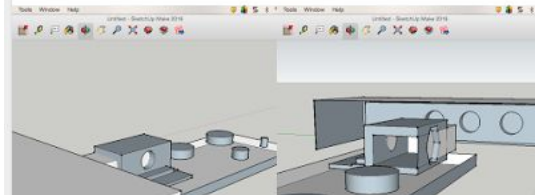
How would I rearrange my classroom? Basically I would provide spaces for making, designing, and creating working drawings. It needs to be flexible to meet the needs of the students in that spell but also cater for 5 different classes in a day with quite wide ranging need..... #hawkesbay #sketchup



Naomi Hamlin • In class tasks

1w

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 beginners version of what I could create with the new knowledge I have learnt today! #Sketchup



Walking The Walk

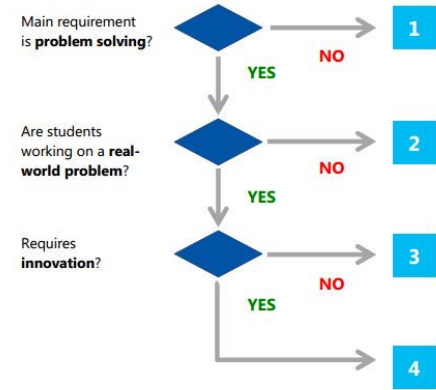
Real World Problems

- 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

ITL. (2013). *21st Century Learning Design*. Retrieved from:
<http://www.itlresearch.com/itl-leap21>

Real-World Problem-Solving and Innovation: Decision Steps



ITLresearch
Innovation Teaching and Learning



Microsoft Partners in Learning
Attribute to Microsoft Corporation

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Designing Content



Rich Rowley @rich_rowley · May 11

What a great activity #designthinking #mindlabdt @NZMindlab



Rich Rowley @rich_rowley · May 11

Good fun #mindlabdt @NZMindlab



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

Wn K Wilson • Interesting links 9w

Jeanette Wing's definition of 'Computational Thinking' as involving "...solving problems, designing systems, and understanding human behavior, by drawing on the concepts fundamental to computer science" is clearly being demonstrated by these teachers in their classes. I particularly like the 'Grapes of Wrath' sphero challenge. [#ComputationalThinking](#)

How Robots in English Class Can Spark Empathy and Improve Writing




ww2.kqed.org

+1

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



+The Huffington Post

+1



Wn K Wilson • Before class tasks 9w

Looking forward to WEEK 5: Computational Thinking.




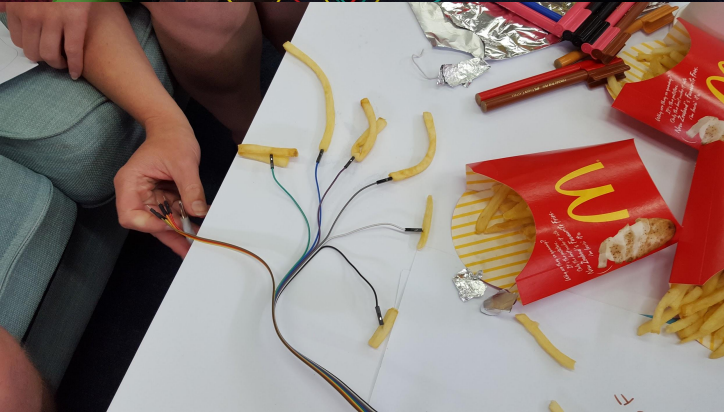
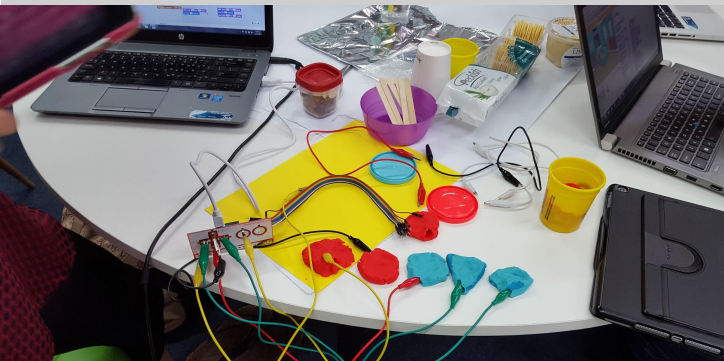
IMAGE: Organisation for Economic Co-operation and Development's Photostream

LINDA LIUKAS

+1



Makey Makey Music




Robots Vs Human Teachers

Eloise Nevin • In class tasks ▾ 4d

Will bots/AI reduce the need for human teachers?
#Christchurch +Paul Rodley +Kevin Harris

Humans vs Robots



Jotika Devi • In class tasks ▾ 6d

Will BOTS /AI reduce the need for human teachers?


will BOTS/AI replace teachers



Vicky Gorst-Smith • Introductions 15w

Wow!

Could you fall in love with this robot?



Bridget Lawrence • In class tasks ▾ 4d

Robots will they take over our jobs? ...maybe! Robots are already taking on teaching roles, teaching toddlers language and autistic children facial expressions.

But what they lack is that they won't be compassionate. Actually we found out they might!

Here is our inquiry cycle

Inquiry on Robots

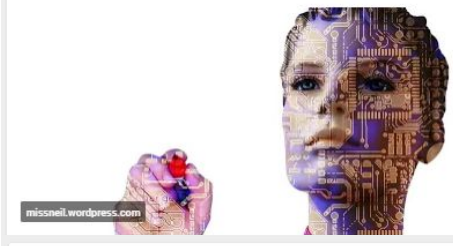
Jordan Neil • In class tasks ▾ 5d

Our collaborative blog as a reflective tool of this evening's take on AI's role in the future learning environment.

#Chelsea #Rachael #Dawn #Jana #Aucklandnorth

<https://missneil.wordpress.com/2016/09/28/the-future-teacher/>

The future "teacher"



Dianne Christenson • Interesting links ▾ 18h

Can we build AI without losing control over it?




Carole Stapleton • In class tasks ▾ 5d

Lots of fun - thanks Dianne and Bernie :-)
#CaroleStapletonDianneChristensenBernieWills #Petone #July2016intake


and thanks to #TaradaleIntermediateSchool for their Unicycle slide that we used from the Before Class Tasks :-)

Will bots/AI reduce the need for human teachers?

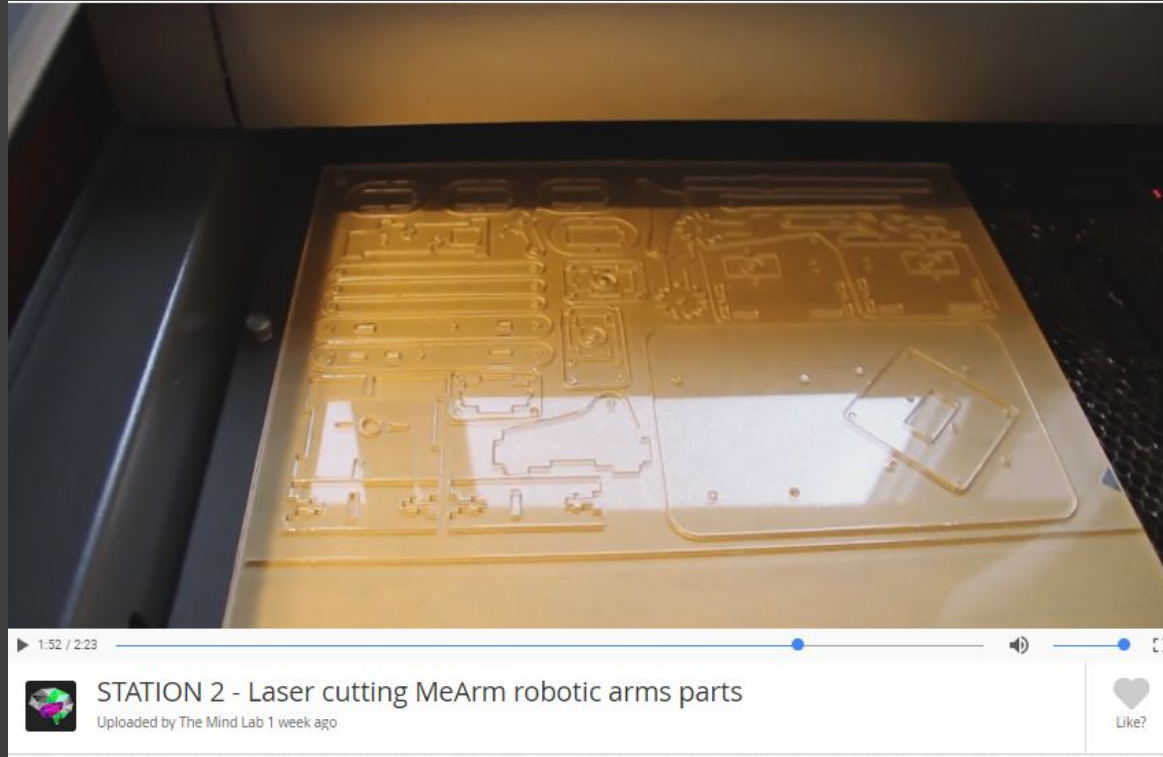


Nazmul Bashar • Before class tasks ▾ 3d

Watch out! The BOTs are coming!



Laser Cutting Robot Components



MeArm Robot Makers



Veronica Ng • In class tasks ▾

2w

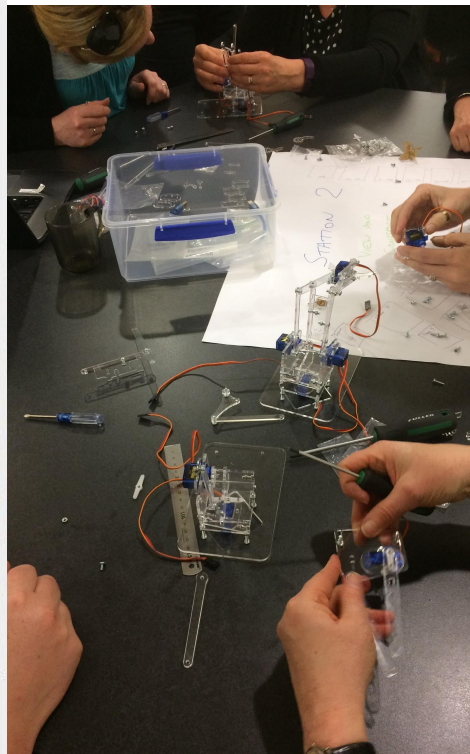
Yay! Successfully built a robot. Teamwork.
+Alex Harwood +Debra Grant

#Aucklandsouth #robotbuilding



9/20/16
3 Photos - View album

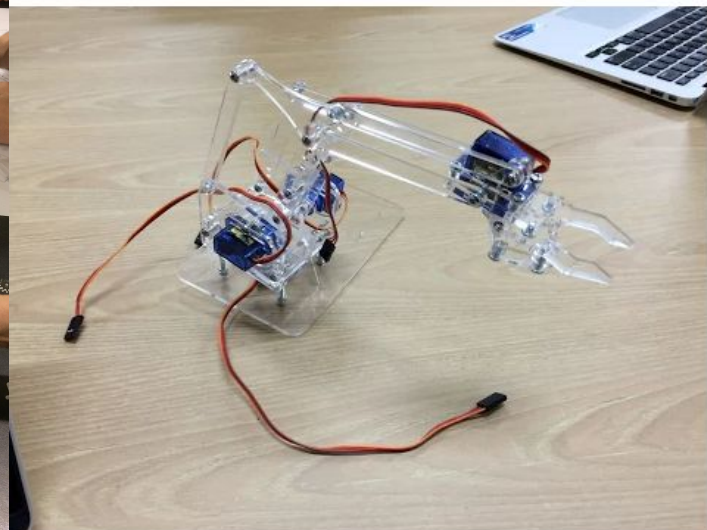
+1 1



Lewis Thorogood • In class tasks ▾

2w

Robotic Arm completed! Can't wait to see it in action
#aucklandcentral #lifelonglearners



+1 2

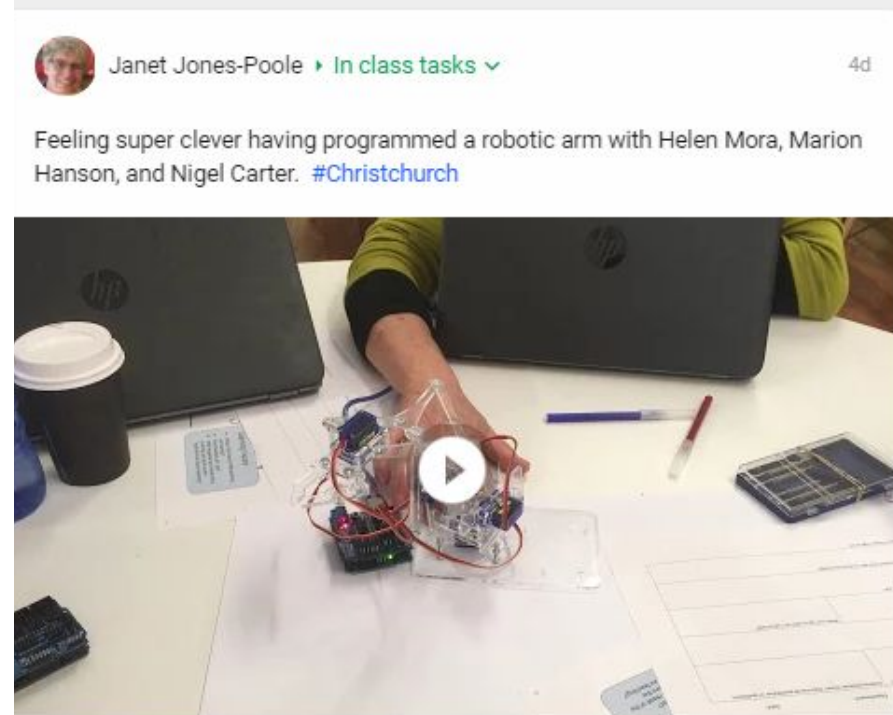
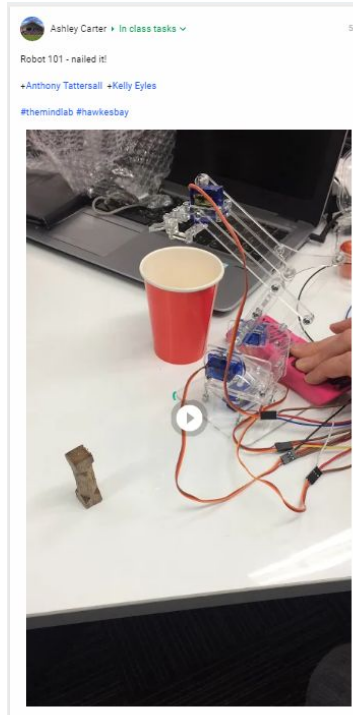
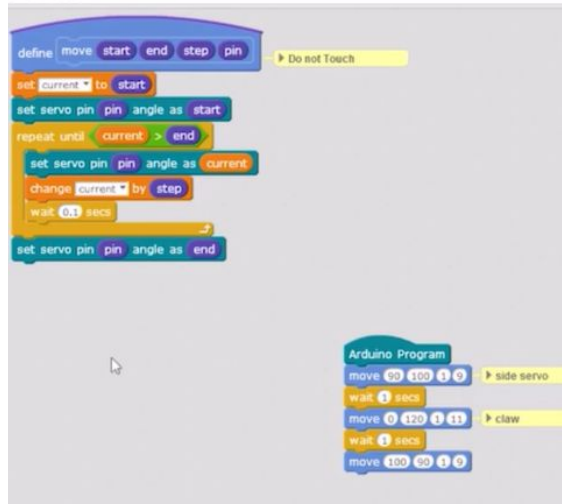


Robot Coders

mBlock

lv3.2.2 - Serial Port Connected - Not saved

je Help



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://hackededucation.co.nz>

Thank you!

HACK-
EDUCATION

Crowdsourced
ideas for NZ's
education future

ABOUT



Take your pick... (answer as many times as you want)



In the future, education will be...



In the future, education will not have...



I wish education...

