Tukuna a whakaaro auaha kia rere kia whakaumutia ai te ao

Through creativity and innovation we intervene to transform the world

TECHNOLOGY

Materials and Processing Technology

What we learned from the pilot

TESAC Conference 2024

Christchurch

Lucia Teague-Schellekens

Riccarton High School

Food and Nutrition, Hospitality and MPT(Soft Materials)

RICCARTON HIGH SCHOOL
Te Kura Tuarua o Pūtaringamotu

Simon Pickard

Otago Girls' High School

Hard Materials and DVC

pc@otagogirls.school.nz

Sean Embling

Mount Maunganui College

MPT - Hard Materials (Wood)

and DVC

Lauren May

Ōtūmoetai College, Tauranga

Food & Soft Materials Technology

ŌTŪMOETAI COLLEGE
Kia māramahia te ora e te akoranga

Mount Maunganui College

Textiles and wood based contexts

Ready

Whakatauki

Big ideas

Significant learning

Significant terms (literacy)

Organisational Strategies

Set

Stay calm

Embrace Change

Keep what you can

Overthinking will slow you down

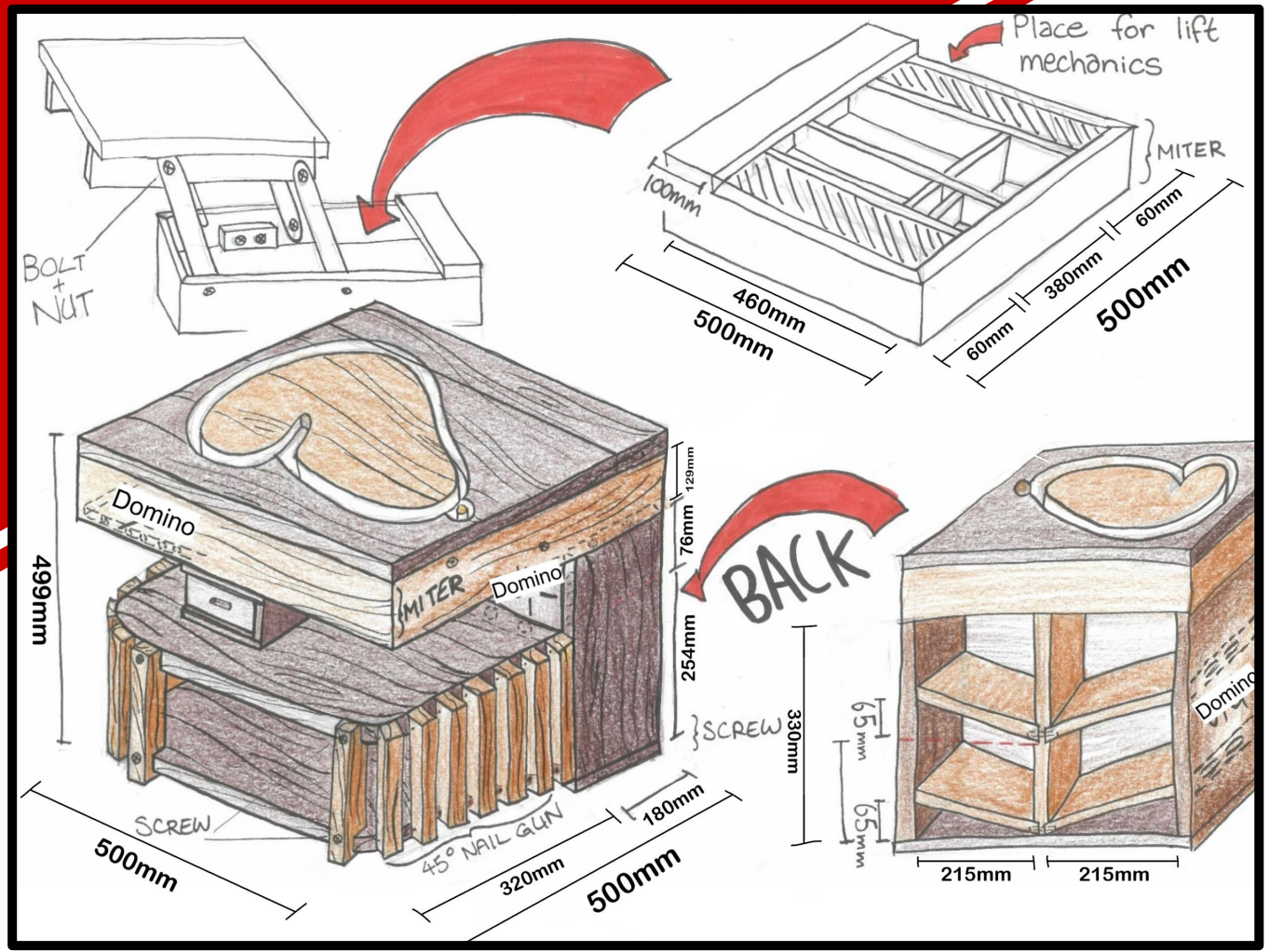
Go!!

Small steps

Specifications are gold!!

Fail exceptionally well!!

Finally don't panic!!


Place for lift mechanics
BOLT + NUT
MITER
100mm
460mm
500mm
60mm
380mm
60mm
500mm
Domino
MITER
Domino
499mm
129mm
76mm
254mm
SCREW
BACK
330mm
65mm
65mm
Domino
SCREW
500mm
45° NAIL GUN
320mm
180mm
500mm
215mm
215mm




Otago Girls' High School

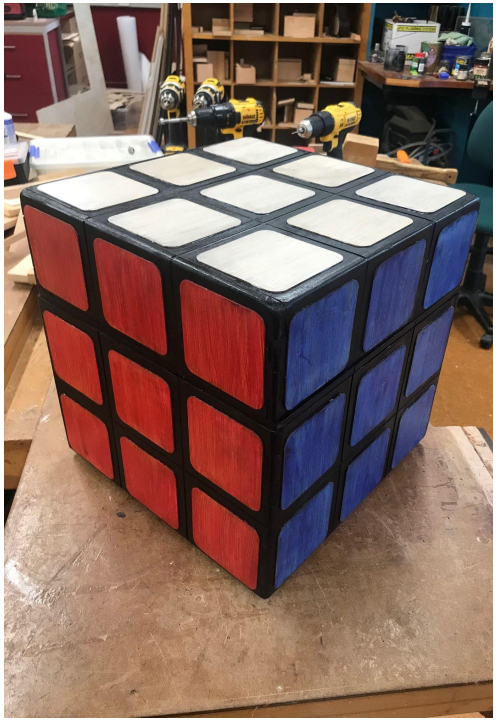
Hard Materials

Evelyn

1.1 - Manaakitaka

“Create a storage container for my brothers rubik’s cube collection”.

UT Ply, MDF, Bamboo sheet, Fabric, Paint and stain.



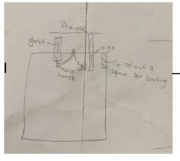
Jessie

1.1 - Manaakitaka

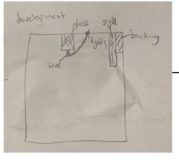
“No Smelter sign frame”

Macrocarpa, Acrylic, LED light strip.

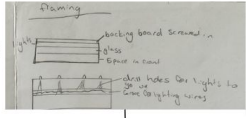
My first sketch of the frame was pretty ruff and simple and I did not this about the practicality of this.



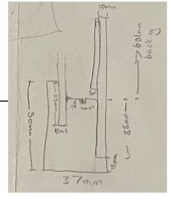
From the first drawing I closed the gap between the sign and backing board to cut down the width of the frame.



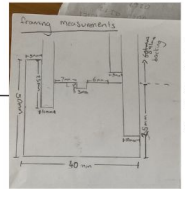
Next development was speaking to my stakeholder and finding out the best way to secure the lights within the frame.



To fit my specifications better I wanted make sure the sign was more secure so I fixed it onto the backing board for the extra support.

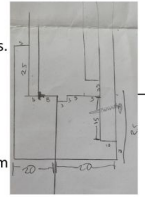


The next stage was drawing the plan to size to figure out spacings and every elements place.

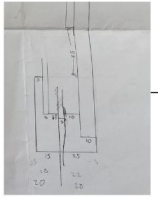


After have a conversation with a stakeholder, they pointed out that the easiest way to assemble the piece would be to be able to slot in everything for the back once the framing was done.

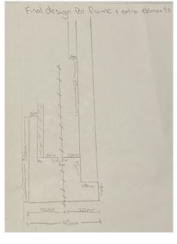
The next step was to figure out all the new measurements and sizes. Also after having stakeholder feedback I decided it would be easiest to make the frame out of two different pieces of 20mm wood.



I realised after a while that I had not factored in that there is a backing board gap that is seen from the front that will be 35mm. Also I had to change where the split was for each 20mm piece of wood.



This is my final design for the framing with all correct measurements and to size in the drawing. The line with lines in it is where it is split between the two parts of the frame.



What it will mean to my Mum

My Mum's Dad passed away from brain cancer when she was 21 but before he got sick he made a huge impact of my family's life. He always showed my Mum to be strong and follow what you believe in and not caring what others think of you. Even though I never got to meet Grandad Gordon, I have been told many heroic stories about him from family adventures away in central gold panning to nights at home watching the rugby with my Mum sitting on sit lap while he drinks his beer and shouts at the tv about bad referee calls. He always was himself from the way he acted to the way he dresses and this made him a huge role model to lots of people around him. Grandad Gordon means so so much to my Mum and she wishes Andie and I (her kids) got to know him as she quite often says some of the traits we have remind her of him. Everyone in the family always talks about how wonderful he was and how much he would have loved Andie and I. Doing my project that not just going to mean lots to my Mum but my whole family.

Jessie

1.2 - Sustainability

A bedside table constructed partly from the parts of a donated table.

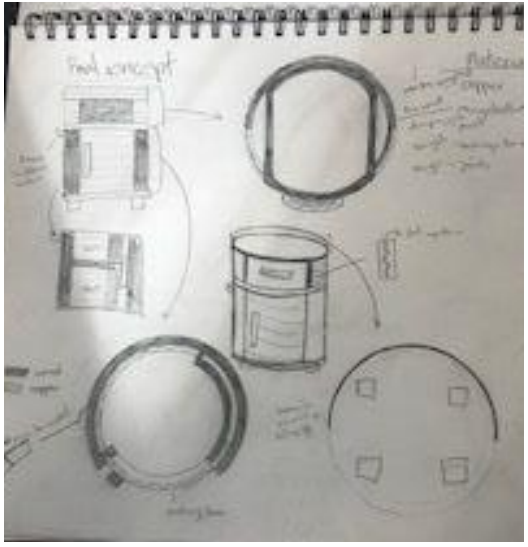
Oregon, Oak, Pine, Glass, homemade wax/oil finish.

Evelyn

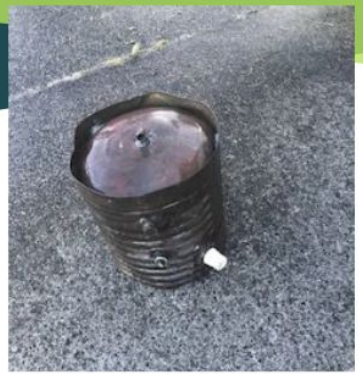
1.2 - Sustainability

“Copper Cylinder bedside cabinet”

Copper, Kauri (ex church pew), Rimu (ex school shelf)



Construction Process- Transforming and Manipulating the Copper



The first thing I did with the copper tank was cleaning it as best I can with water. I decided to use a hose instead of using a water blaster as I didn't want to risk denting the copper from the pressure of the water. As soon as I took it to school, I began planning out what I wanted to cut as I had a reference as to the sizing. I then started cleaning it using water and steel wool. This process took the longest. Once I cleaned the exterior, I cleaned the interior with water, detergent and a scrubbing brush. Although I was not happy with the cleanliness of the product I was eager to continue working on the project. I then used wood and a hammer to 'Undent' the tank. These dents would have been caused by usage of the tank and when it was handled back in 2020 during our house renovations. Once I undented the tank I used 2 pieces of wood made in a curve shape and a table vice to bend out the dents to make the circular shape more symmetrical. The next part of transforming/manipulating the copper was making it sit flat, with the help of Mr Pickard we leveled out the bottom so it was even then it was cut using the angle grinder.
My next step was making the shelves.

Do

Include elements within design briefs that will provide information for Externals

Embrace the theme of the task and encourage students to dig into it.

Allow students projects to develop organically whenever possible.

Don’t

Allow students to take on too little or too much. Either will have consequences for assessment.

Worry about your own levels of knowledge, but be open to learning. Especially in Matauraka Māori.

Template or direct too much. It will hold your students back.

SOFT MATERIALS

Creating a strong trusting physical environment for learning.

Creating a strong trusting physical environment for learning.

- **Tikanga** is the first initial set up, so that routines are decides on that makes everyone happy to abide by. This begins the establishment of strong, trusting **whānaungatanga (relationships)** to developing with their peers, kaiako and other ākonga in the class.
- **Manaakitanga** becomes evident in that there is respect for all members of the roopu within the share the space. Thus, developing the **kotahitanga** (a sense of unity and support). This allows **auahatanga** to be expressed and thrive**.**
- This is the approach I take to embed **Mātaranga Maori** into my teaching pedagogy.

Design Process

Research	Come up with content, brief and issue	Select techniques, processes and tools	Make the prototype	Trial the prototype and evaluate
Key questions: Who are you designing for and what is the problem that needs solving? Who is my user and what matters to this person?	**Key questions:** What are their needs? Where an actual definition of the problem is defined.	**Key questions:** How can I best communicate my design ideas to others? How do my ideas meet my users needs?	**Key questions:** How can I show the aesthetics and functions of my idea?	**Key questions:** What worked and what didn't?

SOFT MATERIALS

1.1 (92012) - Tuakiri – Identity

The issue: Identity / tuakiri: The issue is that the hoodie fits nicely as a teenage uniform and fashion but needs to somehow reflect my own personal identity.

Wānanga (collage, testing fabrics and testing techniques)

Kete (collage + testing fabrics and testing technique)

Who am I? Teenager - HOODIE / SWEATSHIRT

Brief: Provided for them, only adapted once ākonga have decided on their chosen personal technological outcome

Specifications: these are developed to be specific to their personal technological outcome

Materials/resources: e.g., chosen fabric, thread, Sewing machines, overlockers, patterns... The list is long!

.. Wānaga to create their KETE

Collage about Friends

Collage about me

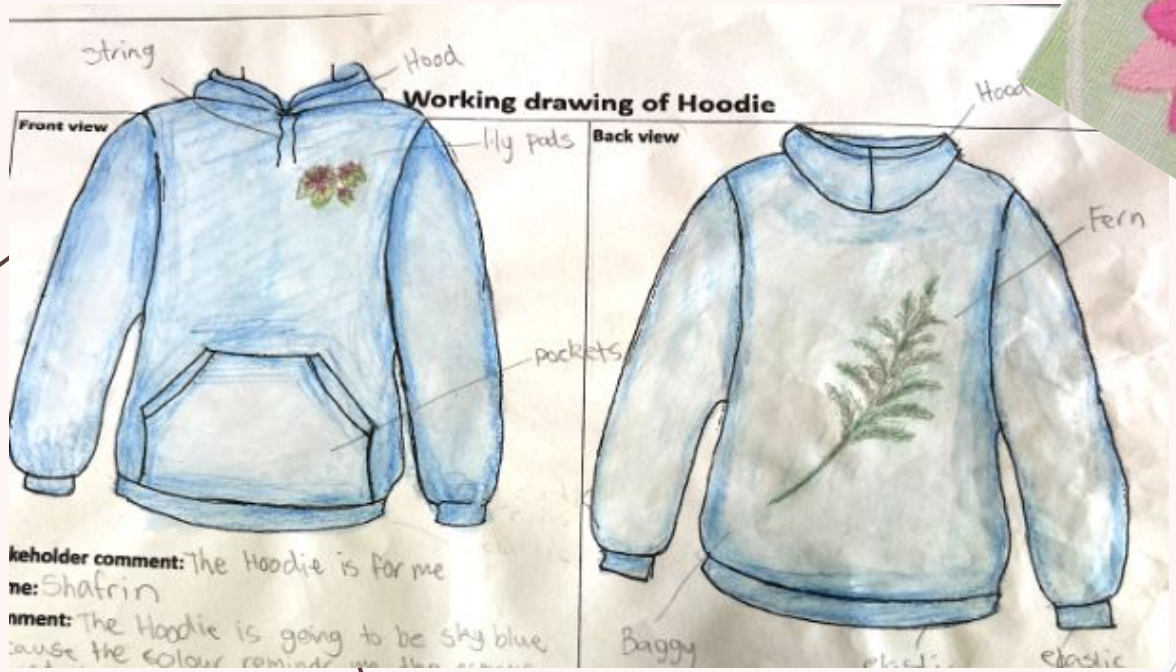
Collage about Ancestry

Teenage Tuakiri

Through korero and urupare (discussion and reply) - informed decisions were made
This is what this ākonga extracted from their kete to create their design.

Sky blue because the colour reminds me of the oceans around New Zealand, the beach near my house and the many rivers that are found in bangladesh.
The embroidered lily pads are the national **flower of bangladesh.**
The **embroidered fern** represents **New Zealand** as I born and raised here all my life.
The reason I chose the plants to represent the countries as I **love greenery and nature.**
All of **these designs relate back to my Tuariki.**

The design that developed



Further wānanga .....

Overlocker open seam

This is a seam that is great for the hood or shoulder and adds no bulk. It looks professional and is quick and easy if you are confident on the machine.

Open seam Double topstitch (using the No.5 foot)

I used this seam on the hood and shoulder seams for a great and professional look .This seam is used in many bought hoodies/sweatshirts and it is great for holding down the flaps and causes no bulk.

Overlocked closed seam

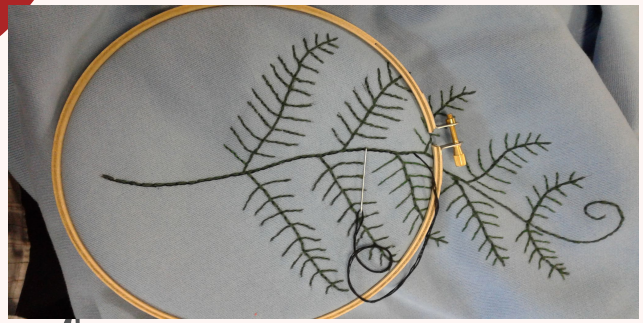
This is a great finish to the underarm seams and adds no more extra bulk. It looks professional like the store bought clothes and is quick and easy if you know how to use an overlocker.

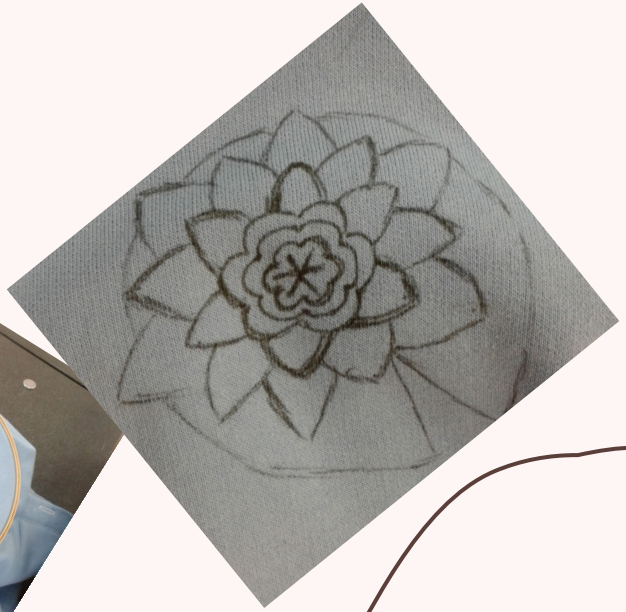
Closed seam overlocked using Double Topstitch(No. 1 foot and No.5 foot)

It does look really professional and it's a great way to make sure that the seam is really flat, as there are two line rows of stitching.

Testing techniques that could be used to construct the outcome.

Further wānanga .....





Trialing new techniques that could be used to display their Tuakiri on their outcome

Whoa!

Final outcome...

Brief provided

SOFT MATERIALS
1.2 (92013) - UPCYCLING

Experiment with different materials to develop a Materials and Processing Technology outcome

Kaitiakitanga

The 3 Pillars of Sustainability: Manaaki Whenua

Manaaki Tangata

Economical

A need and/or opportunity

Identify a need or opportunity

I found a need to make a shopping bag for my mum.

To make a laptop case for my Aunty, as she needed a laptop case for her to keep it safe.

Awaiting the arrival of a new baby (gender unknown) gave me an opportunity to make a baby Blanket

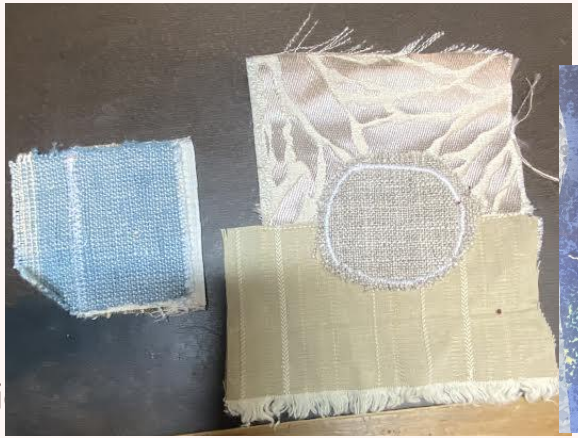
Not an easy task for ākonga

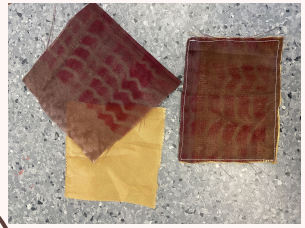
Ākonga must only use the fabric available in the textile scrap cupboard

Testing to experiment with materials to then create their own

Using interfacing to stiffen fine fabric

Applique stitch, using Steam-a-seam for stability





Layering using a thick and fine fabri

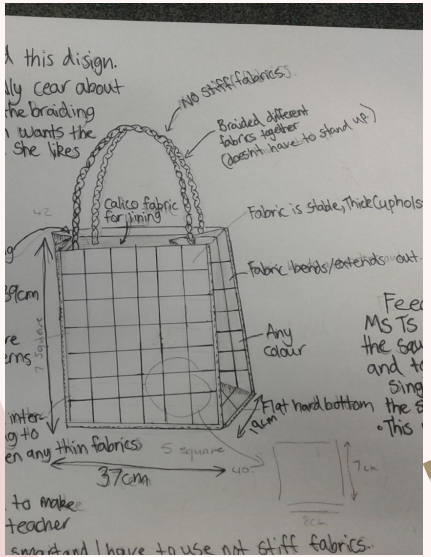
Overlocking

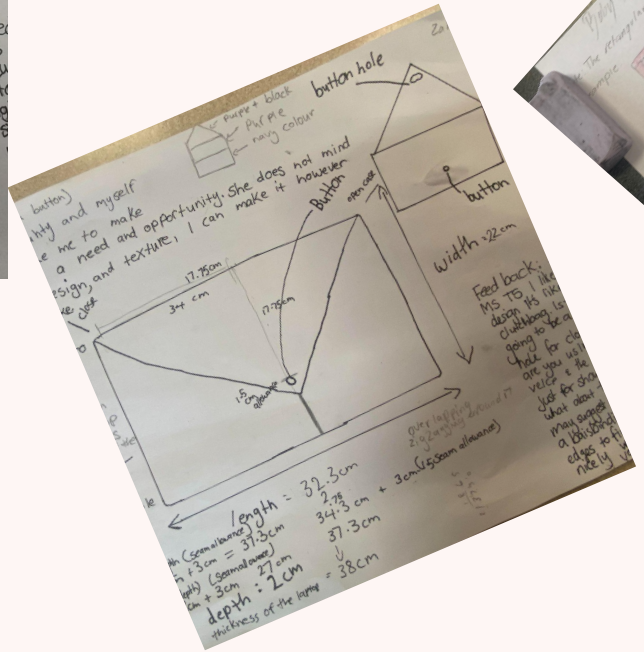
1 cm seam

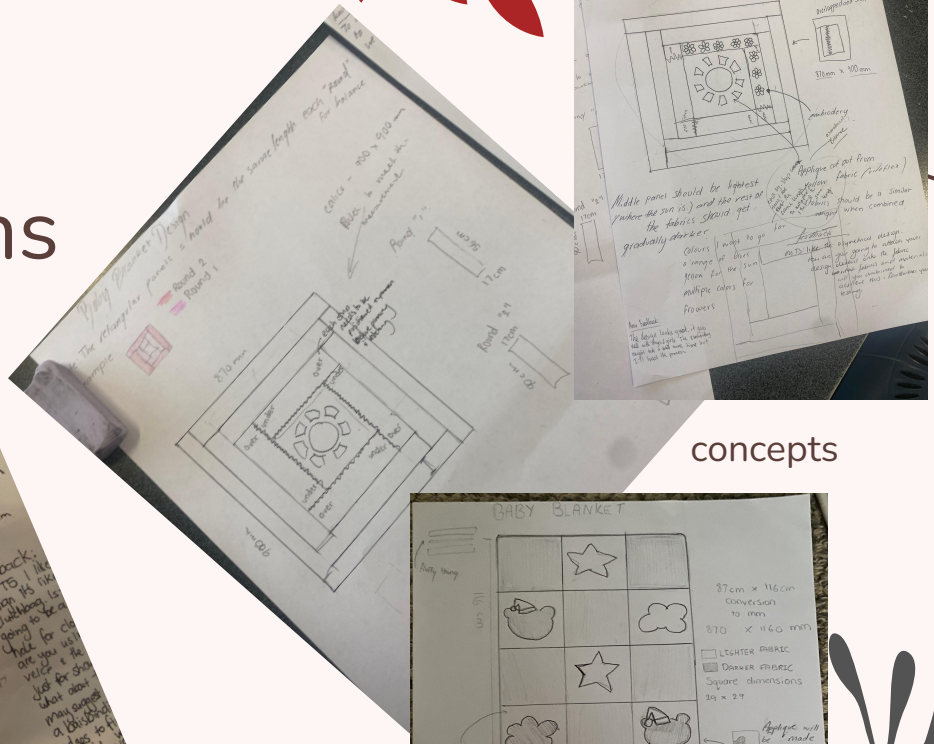
Open seam

Design ideas

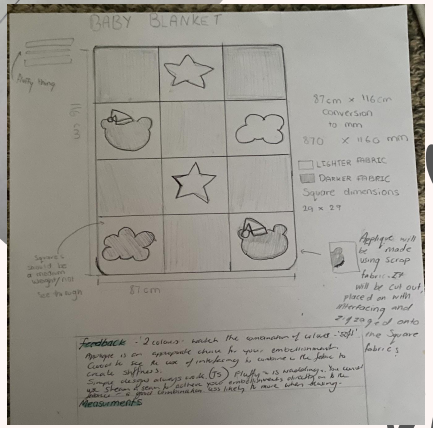
Final designs



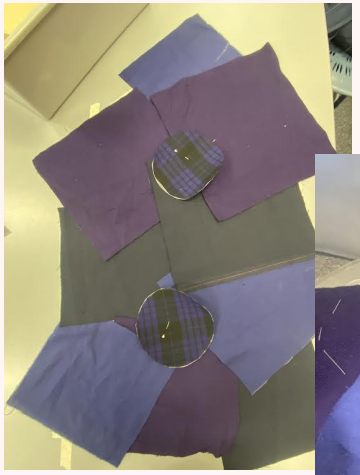


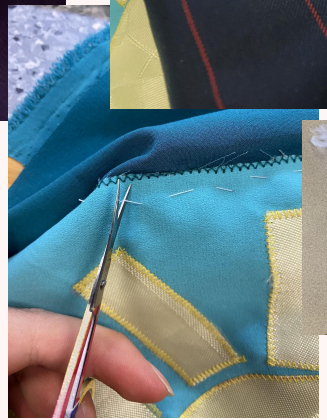


concepts

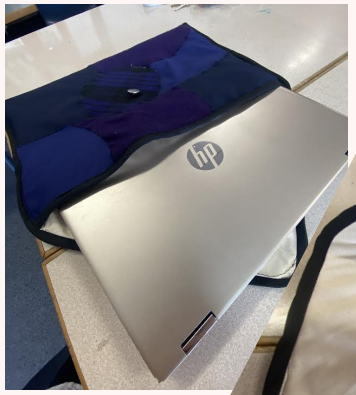


Create the Fabric





Shopping Bag



Laptop Case for Aunty

Babies Blanket
and
playmat

Final outcomes

Positives

Ākonga take ownership of their work.

Ākonga take pride in the outcome.

They understand the purpose of the design process.

For me personally, I can give back.

I am prepared and confident that my course delivers

I was able to learn from my mistake made during the Mini Pilot.

Food & Soft Materials Technology

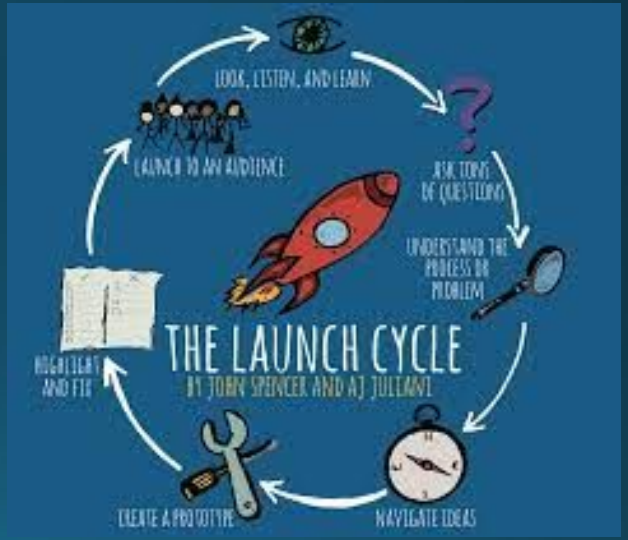
PILOT REFLECTIONS

Lauren May - Ōtūmoetai College

ŌTŪMOETAI COLLEGE
Kia māramahia te ora e te akoranga

DESIGN CHALLENGE DAY

- Five Yr 11 classes - 3 x Food and 2 x Soft Materials (100 students)
- 1 day off timetable working together across contexts
- Solving problems through empathy, ideating and rapid prototyping to produce a model of a possible solution
- Technological practice & Design thinking
- Launch Cycle - John Spencer



THE LAUNCH CYCLE

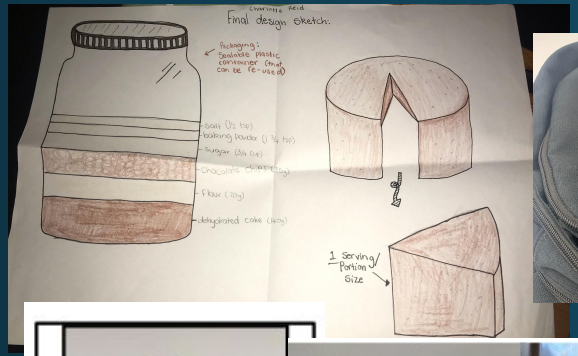
A DESIGN THINKING FRAMEWORK FOR K-12 STUDENTS

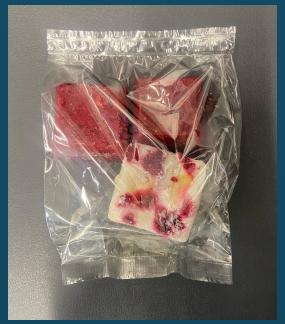
FOOD – Upcycling & Manaakitanga

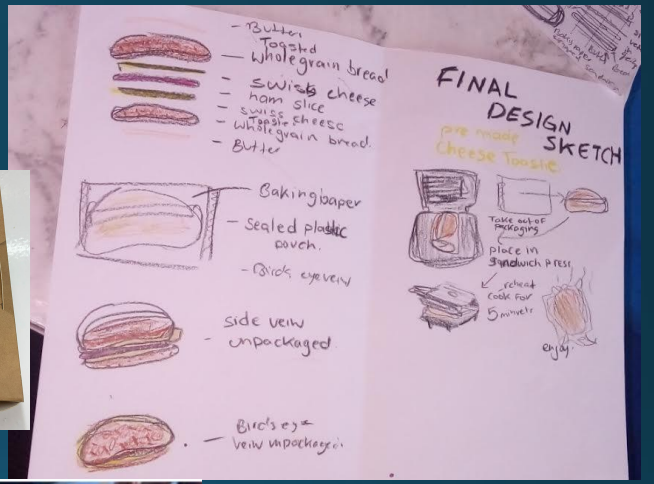
- Brookfield New World – big supporter of our kura
- Tour of supermarket
  - Major areas of waste
  - Social Supermarket
  - Good Neighbour Trust
  - Takitimu Homework Hub

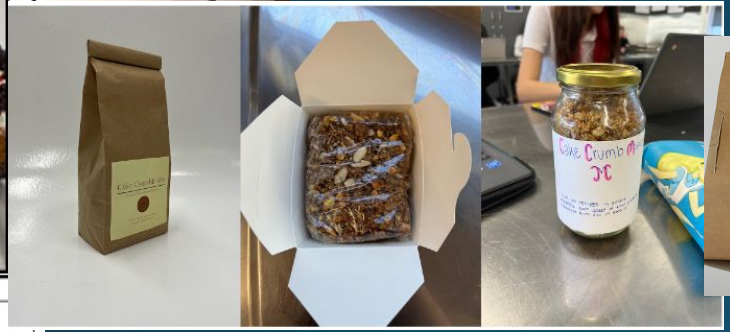
- STUDENT WORK
  - Baked Goods
  - Meal kits
  - Ready to use ingredients
  - Snacks

STUDENT WORK









Results

To ensure the texture of my cake was right, I has my stakeholder doing different trials with my cake mix, until I found the right quantities of ingredients. I removed the oil from the list of ingredients, as it was making the cake too oily, and I added chocolate chips for an added texture.

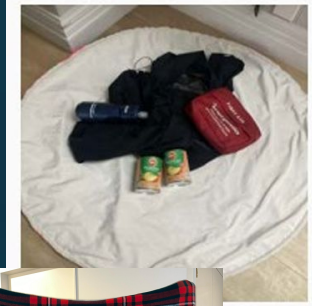
Here is a picture of the different trials we did to work out which of the techniques we would like to use

SOFT MATERIALS – Upcycling & Manaakitanga

- Civil Defence Tauranga – Tauranga City Council
- Cyclone Gabrielle
  - Impact of civil defence emergency on families
  - ‘Grab Bag’ requirements

- STUDENT WORK
  - Grab bags – range of options
  - Floatation devices for pets/small children
  - Bag into blanket

STUDENT WORK EXAMPLES










POSITIVES…

- Emphasis on authentic contexts driving learning
- Freedom to choose own localised context
- Recognising the gaps in our year 10 programme quite quickly and easily once we got going
- Increased sustainability focus - so relevant, more than ever
- Flexibility to mix n match - Pilot has to assess all 4 standards but we could choose which contexts and in which order
- Best professional development we could ask for
- Opportunity to work closely with our Kāhui Ako

CHALLENGES…

- Unsure of the depth required
- Feeling unsure about how it will all play out
- The amount of work it has taken to actually implement
- Freedom to choose! So many places we could have taken teaching and learning!
- Disruption in Term 1 - Continued disruption in Term 2
- Getting our heads around the extra layers
  - Te Ao Māori - world views
  - Mātauranga Māori
  - Sustainability focus

ADVICE…

- Start now!
- Significant Learning
- Align the awesome
- Start with the problem not the project!
- Authentic contexts - local connections
- Challenge yourself and each other
- Collaborate
- NZC – Still your number one guiding document.
  - https://technology.tki.org.nz/content/download/11407/36592/file/technology-curriculum-support-oct-10.pdf
  - https://technology.tki.org.nz/content/download/11460/36755/file/tl-strategies-2011-2597.pdf
- Technical language and terminology
- Ask the question – all the questions!
- **STANDARDS COME LAST**

HOT TIPS FROM THE TEAM

- Supporting structures and scaffolds - not templates!
- Technical language | Kupu is vital
    - Change your language to model what you're wanting to hear from ākonga
- Be familiar with the new NCEA website below.
- Read the unpacking and additional info - NCEA Website
- Embed Matauranga Maori into your teaching pedagogy
- 1.1 and 1.2 MUST be evidenced by different projects
- More than one Stakeholder feedback is required
- Know that what you have been doing before is still great. Use it. Don't make your planning difficult
- Google Keep.

Kōrero and pātai