National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Exemplar for Internal Achievement Standard

Materials and Processing Technology Level 1

This exemplar supports assessment against:

Achievement Standard 92012

Develop a Materials and Processing Technology outcome in an authentic context

An annotated exemplar is a sample of student evidence, with a commentary, to explain key aspects of the standard. It assists teachers to make assessment judgements at the grade.

New Zealand Qualifications Authority

To support internal assessment

	Grade: High Not Achieved
6	For Achieved, the standard requires the student to develop a Materials and Processing Technology outcome in an authentic context. This involves creating a fit-for-purpose outcome for a person, whānau, or community using a brief with specifications. These examples are partial extracts taken from two student folios. Both students have worked in processing technology contexts (food and electronics). Student 1 has cooked a range of outcomes for whānau members, focusing on trialling and evaluating different recipes. To meet the standard, they need to expand the technological practices used to develop the food outcome. This can be achieved by experimenting with different ingredients, equipment, and techniques. For instance, they could test various cooking methods and coatings for the mozzarella stick to develop clear and measurable physical and functional specifications. Student 2 has developed a conceptual design for a processing technology outcome, primarily focusing on research into the function of different electronic components. While they have used suitable equipment and designed a solution, there is insufficient evidence of development to meet the standard. For Achieved, the student should move beyond research and a single conceptual design to actual development, which could involve building models and testing them. It is essential to also explain and evaluate the specifications such as waterproofing, cooling efficiency, and the sustainability of materials, which requires the outcome to actually be fabricated. Both students should aim to produce a tangible, fit-for-purpose outcome with measurable specifications resulting from the use of a range of technological practices. The evidence in both samples presents as incomplete.

Student 6: High Not Achieved

NZQA Intended for teacher use only

My Family





I was born in New Zealand. My father, a Māori by ethnicity is a dairy farmer. My mum is who is from England, stays home and helps in the family business. I have 2 brothers who are elder than me. We often have family gatherings with both my mum and dads whānau and we often cook meals to cater for both families.

Food important to Dads culture – Hangi, sea food, vegetables
Food important to Mum's culture - Fish and chips, cottage pie, scotch egg, apple crisp


To design a food product that reflects the history of my family and represents my family. We get to find out more background information about my family's history and the more we know ourselves makes us more strong designers and also makes us better with making our own recipes, more skills in the kitchen.

The members of my whānau who are giving me feedback are my dad, mum and my older brother. My friends, [redacted] and [redacted] and my teacher will also help me develop my product with taste testing's and advice on my cooking.

After interviewing my whanau, alongside the specifications from my teacher, I need remember to

- Include cultural ingredients commonly used in the following countries: England and NZ Māori
- Use cooking techniques typical of these countries, such as: Roasting, stewing, frying, Hangi
- Keep the spice/heat tolerance as: mild
- Not to include gluten, tofu, eggplant and olives as these are ingredients members of my whanau won't eat
- Include one/some of these favoured ingredients: Dairy, chilli sauce or fried rice

Idea 1 : mac & cheese

I chose this because my mums side of the family really enjoys such foods and it will be nice

- 300 g macaroni
- 30 g butter
- 25 g flour
- 500 ml milk
- 200 g cheddar cheese
- Bread crumbs.

Boil water and cook macaroni. 2. Make cheese sauce by combining butter, milk, flour and cheese. 3. Mix the macaroni with the cheese sauce and then put it into a tray with some extra cheese and bread crumbs on top. 4. Leave in oven at 200 degrees until the top layer turns crispy and then serve with a sauce of your choice.

Evaluation

What do you like about this idea. I like this idea because it is easy to make and quite tasty and my mums family will really appreciate it.

What do you dislike about this idea. I dislike the fact that I have had it a lot and its not something different to what I eat heaps and that my dads side of the family doesn't really eat foods like this much

How could i change this idea. Next time I will add some more herbs and spices to make it more flavoursome

Results. Our mac and cheese cooked nicely and our process went smoothly, it smelled nice, it was a yellowy colour because of the cheese.

Reflection

Feedback from classmates said

It was very bland and plain

Lack of flavour

Idea 2 : cheese toasted sandwich

This will be enjoyed by my dads side of the family because they really like foods with lots of ingredients involved.

- White bread
- Tinned spaghetti
- Grated mozzarella cheese
- Canned pineapple
- Ham
- Butter

Put all the toppings on a piece of bread and then once all toppings are on there, put another piece of bread on top of everything and put it in the hot sandwich press until golden brown.

Evaluation

Results. Not cooked properly and lots of topping fell out, it was a brown colour but it actually smelled nice even though it didn't really taste great

Feedback from classmates
Stale and flavourless and it was quite messy

Idea 3 : cheese burger

This cheeseburger will be enjoyed by my mum and my dads side because this burger consists of ingredients liked by both sides of my family

- Brioche buns
- Tegel Free Range Chicken Burgers Crunchy Breast
- Wattie's burger sauce
- Cheese slice, Lettuce
- Tomato
- Beetroot
- Pickles
- butter

Mince chicken breasts and cook in a frying pan on medium high heat, toast buns in oven on fan grill until toasty, add toppings and sauce to buns and then add the chicken.
Serve!

Evaluation

Results. it cooked well and our process was good, but the taste wasn't that great

Feedback from classmates
Not very eye pleasing.
Tasty, nice texture and flavour

My evaluation.

What do you like about this idea? The simplicity and goodness of the burger

What do you dislike about this idea? Cooking chicken because it can be dangerous and difficult.

How could I change this idea? Cook chicken as a whole breast instead of cutting it up

Final Product Recipe

Fried mozzarella sticks

- 2 large eggs, beaten
- ¼ cup water1
- ½ cups Italian seasoned bread crumbs
- ½ teaspoon garlic salt
- ⅔ cup all-purpose flour
- ⅓ cup cornstarch
- 2 cups oil for frying
- 1 (16 ounce) package mozzarella cheese sticks

Cut cheese into sticks, dip cheese sticks in flour then egg then breadcrumbs seasoning. Put battered cheese sticks into the frying pan on high heat until a crispy outer layer forms and eat.

Evaluation

Our deep fried mozzarella sticks turned out better than expected with a nice crust on the outside and beautiful melted cheese on the inside.

Our peers enjoyed our mozzarella sticks and I will be making them in the future. They were served on a nice plate with some tomato dipping sauce if you wanted it but in my opinion they tasted better on their own.

We decided to make this because it is the ultimate cheesy food, it's about as cheesy as it gets.

Products fit For Purpose

I designed and made my product for my mum because she really enjoys cheesy foods. I designed this to fulfill her enjoyment for cheese

The specifications were:

Specification 1: crispy outer layer
Meet Yes/No

Specification 2: stringy mozzarella cheese inside
Meet Yes/No

Specification 3: tidy looking mozzarella sticks
Meet Yes/No

Specification 4: flavour other than just cheese
Meet Yes/no

My Product meet these specifications because it had a nice crispy layer on the outside of the stringy mozzarella cheese

My Product did not meet these specifications because they were in weird shapes and sizes and not very tidy and were kind of plain and cheesy

If I were to redesign this product I would change the seasonings and add some more tasty products to give it some more flavour.

Introduction

Fishing is an important part of the Maori culture because they needed food and they used fishing as a main source of food. Maori are connected to the sea spiritually and so the sea is important to the Maori culture. They also have a god for the fishes and the sea so the sea is important in their culture for myths and legends

The bait fish storage system uses a piezo buzzer, LCD, Arduino Nano and a button and a thermometer. You have to use the buzzer to signal that the box is open and the LCD shows the temperature and we get the temperature because of the thermometer. The Arduino Nano codes the equipment to do what we want it to do. You have to use the safety glasses to protect your eyes when soldering pieces together. Don't burn each other, wood or flammable materials

The Arduino that we are using is the Arduino nano. An Arduino puts out commands that follow our code to the electronic equipment and the equipment will follow the commands within it's abilities. For example you can make a speaker play sound at certain loudness but you can't make it become a sensor and detect objects. The Arduino needs a power source to put the commands to the equipment and to get the same commands to multiple objects at once with a breadboard so you can power more things at once.

Design Thinking and Brief Development

The bait box is meant to be waterproof so the customer doesn't have to worry about it breaking or rotting the bait from the inside. The Bait box has electronics for a cooling system so the box must be watertight so they ain't broken and short circuited. To keep the Bait box cool we use a fan and a thermometer to tell if it to hot

We question the stakeholder because the outcome might be different than they imagined and then the function of the Bait box won't meet the specifications of the stakeholder.

The materials that are needed for the Bait box must be sustainable so that the Bait box is good for the environment and doesn't damage it and the animals in the ecosystem. We do this by using materials that are plant based so we can grow them and not have to look for them under the Earth. These resources still have to func

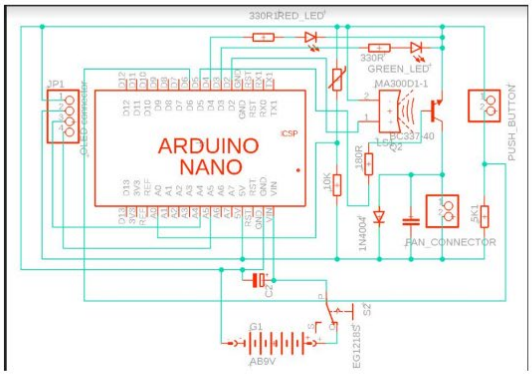
https://bootcamp.uxdesign.cc/design-thinking-process-b64aca6d4a6a

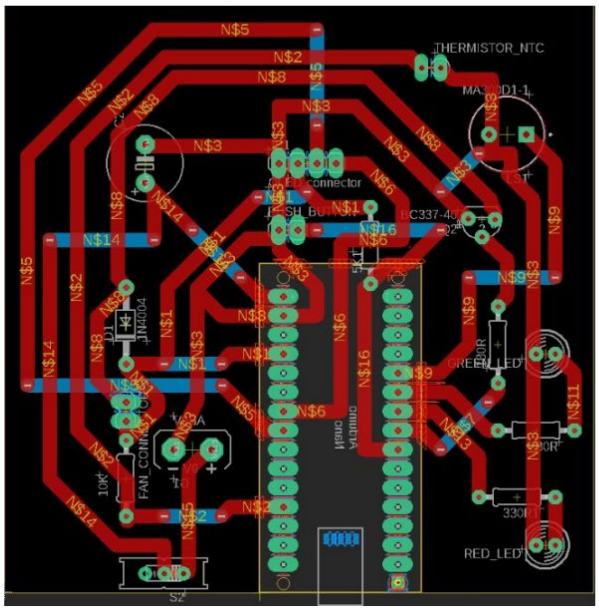
To get ideas for the Bait box we used Design Thinking Process to see what was needed for the Bait box.
EMPHASIZE: To get the ideas we used a questionnaire and questioned the stakeholder
https://docs.google.com/document/d/1tdYkcbSgK7GOZQNeXDDJCJZXRnWVOkZ0iq9xy_UPY5s/edit
DEFINE:
We used the Emphasise phase we knew what the problem with the bait transportation and storage was between multiple people to reduce a common inconvenience.
IDEATE: The mind map was created by using the website mindmeister. This helps us visualize the problems with the bait when going fishing
(https://www.mindmeister.com/map/2816473565)

Materials and Equipment Selection

To make the box we need to use a strong material that is eco-friendly as well as able to function for a lot time so for that reason we are going to you biodegradable plastic. Plastic is a famous material because of its uses and how it lasts long. The problem is that it isn't biodegradable so it is harmful to the environment. To use biodegradable plastic will give us the benefit of plastic and get rid of the negatives of it. The plastic will also not interfere with the electronics so we don't have to worry about them. To get the electronics and the right placing for them comes for the schematics on the slide below (the next slide). Before using the equipment for the Bait box we tested them to make sure they work so we know that if the first test of the Bait box fails we know it isn't the equipment themselves. We also learnt that codes to operate the equipment and what each code does for each equipment.

Materials and equipment selection: Schematics





Material and Equipment selection (continued)

From slide 8 to 17 is a list of equipment used for the Bait box storage system

The Arduino nano is a smaller version of the Arduino uno so it saves space for other equipment in the Bait box. The Arduino nano gives a list of instructions for the equipment to use and under certain conditions should they do something else like the fan only blowing air at a certain temperature otherwise it doesn't move

Material and Equipment selection (continued)

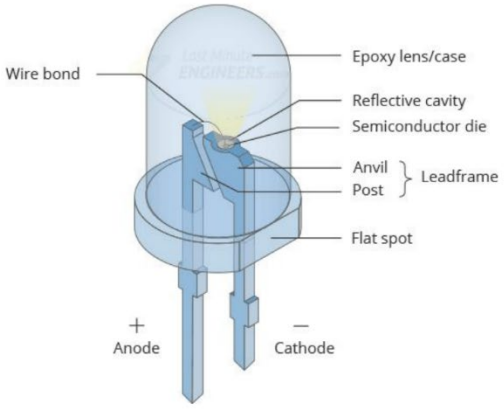
We use red and green LEDs to tell us if the heat in the Bait box is going to spoil the meat or not. The red tells us the Bait box is too warm for the meat and green tells us that the Bait box is cool enough for the meat.

LED P/N Suffix	Description	Chemistry	# of Elements	Color Temperature (CCT Typ)	Peak Wavelength (λ / x-coord)	Dominant Wavelength (λ / y-coord)	Forward Voltage (Vf Typ)	Forward Voltage (Vf Max)	Brightness
H	High Efficiency Red	GaP	2	~	700	650	2.0	2.5	Standard
SR	Super Red	GaAlAs	3	~	660	640	1.7	2.2	High
SR	Super Red	AlInGaP	4	~	660	640	2.1	2.5	High
SI	Super High Intensity Red	AlInGaP	4	~	636	628	2.0	2.6	High
I	High Intensity Red	GaAsP	3	~	635	625	2.0	2.5	Standard
ZI	TS AlInGaP Red	AlInGaP	4	~	640	630	2.2	2.8	High
SO	Super Orange	AlInGaP	4	~	610	602	2.0	2.5	Standard
A	Amber	GaAsP	3	~	605	610	2.0	2.5	Standard
SY	Super Yellow	AlInGaP	4	~	590	588	2.0	2.5	Standard
ZY	TS AlInGaP Yellow	AlInGaP	4	~	590	589	2.3	2.8	High
Y	Yellow	GaAsP	3	~	590	588	2.1	2.5	Standard
SUG	Super Ultra Green	AlInGaP	4	~	574	568	2.2	2.6	High
G	Green	GaP	2	~	565	568	2.2	2.6	Standard
SG	Super Green	GaP	2	~	565	568	2.2	2.6	Standard
PG	Pure Green	GaP	2	~	555	555	2.1	2.5	Standard
UPG	Ultra Pure Green	InGaN	3	~	525	520	3.5	4.0	High
UEG	Ultra Emerald Green	InGaN	3	~	500	505	3.5	4.0	High
USB	Ultra Super Blue	InGaN	3	~	470	470	3.5	4.0	High

The picture on the left shows us the Red and Green LEDs maximum voltage of 2.2 for the Red LED and 2.6 for the green LED. We need to know this because the Arduino nano gives out 5V which will wreck the LEDs. With the picture on the left we know that we need a resistor so the LEDs doesn't explode.

https://electronics.stackexchange.com/questions/389726/whats-the-difference-between-typical-and-maximum-forward-voltage-for-an-led (this website is where we got the LEDs maximum voltage

Parts of LED



https://lastminuteengineers.com/light-emitting-diode-led/

Resistor (used to protect LED)

The Arduino nano outputs 5V which will cause the LEDs to stop working so the solution to this problem is to put resistors into the circuit so the LEDs don't get a rush of electricity all at once but let the electricity go at a slower pace and also the Arduino nano will still put out 5V

The equation of resistors

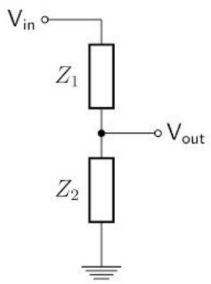
V=IR

Voltage = V, Current = I, Resistance = R

V/I = V

To find the LED resistor for the circuit
R=Vs-Vled/I led
R=5-2/0.02
R=3/0.02
R=150 ohms
Vs = Supply voltage from arduino = (5V)
Vled = LED voltage (from datasheet)
I= current of LED (0.02amps from datasheet
R=Resistance value of resistor

https://en.wikipedia.org/wiki/Voltage_divider

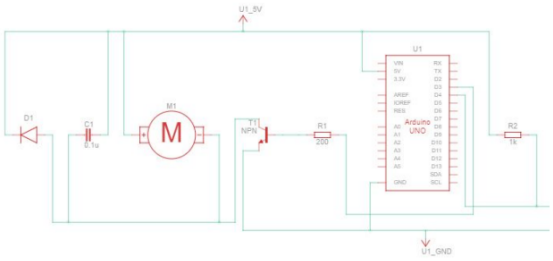


Thermistor: A thermistor does the same thing as a variable resistor but it also changes and tells us the temperature when it rises or drops. The formula of a thermistor is shown by the bottom photo

If we put a thermistor where Z1 is, we can create a tool that can tell us the temperature because of how the Vout will change depending on the temperature.

$$V_{\text{out}} = \frac{Z_2}{Z_1 + Z_2} \cdot V_{\text{in}}$$

Materials and Equipment selection (continue)

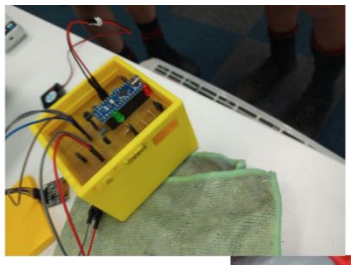
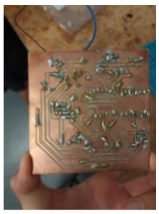
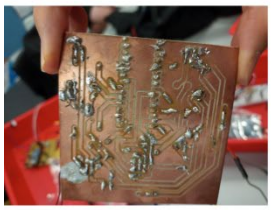
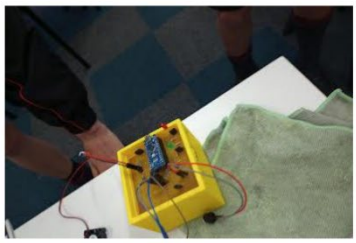


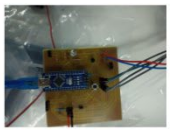
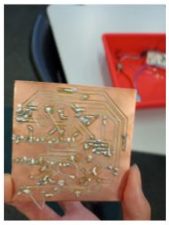
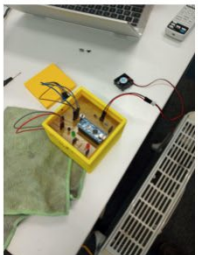
The diagram above shows us the fan motor, the transistor, the diode D1, the capacitor C1 and the base resistor R1. The diode D1 stops electrical current from going backwards which would damage the transistor. The capacitor C1 absorbs electronic noise, which is disturbances in an electrical signal, that might be produced by the fan motor. The base resistor R1 is to block the voltage from 5V to 0.7 which is needed by the transistor

The Fan motor used has a 5V voltage rating and the 200 milliamps maximum current rating. The transistor chosen depends on this information as it needs to be able to handle the current. Therefore I have chosen the BC337 transistor as it can handle 800 milliamps according to the datasheet Ic=800madc

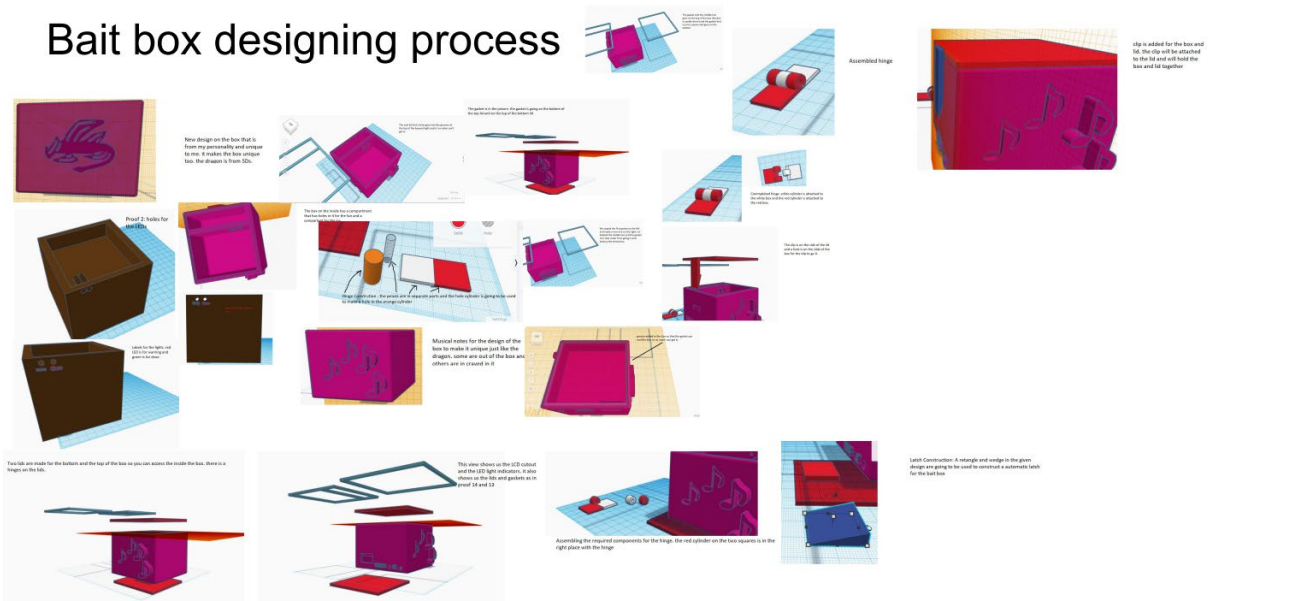
The fan motor can safely take 5V and 200 milliamps. The transistor needs to be able to handle these currents so the transistor chosen was the BC337 transistor which meets our standards according to the datasheet Ic=800madc because it can withstand 800 milliamps.

Circuit production and prototyping


Bait box designing process



	Grade: Low Achieved
5	For Achieved, the standard requires the student to develop a Materials and Processing Technology outcome in an authentic context. This involves creating a fit-for-purpose outcome for a person, whānau, or community using a brief with specifications. The student has developed a processing technology outcome to demonstrate manaakitanga towards a treasured family member. Basic technological practices have been followed, including conducting a stakeholder questionnaire, researching and trialling various suitable recipes, and testing ingredients for the pie filling. The physical and functional specifications of the pie have been broadly evaluated as either met or not met, and the pies have been consumed in the intended environment. For a more secure Achieved, further evidence is needed to show how the idea for the pie developed from the initial mood board and recipe trials. This includes detailing the ideas gathered during the modelling phases and explaining how these ideas were used to develop measurable physical and functional specifications for the product.

Conceptual statement

I am going to make a savory food product to serve to my whānau. The food product will represent the identity of my whānau. I am making a meat pie from scratch. My product is targeted at my dad. While using his Australian culture. I am making it to show my Dad that I love him by making food from where he was born. It is also one of his favourite foods so I'm making it to make him happy. I'm planning to connect with my dad by sharing the food I will make for him. It will be made while I'm in class. I will be making different pastries to see what one tastes the best. I will also be trying different cheeses with it and see if I need to add any spices.

RESEARCH

whanau - Dad

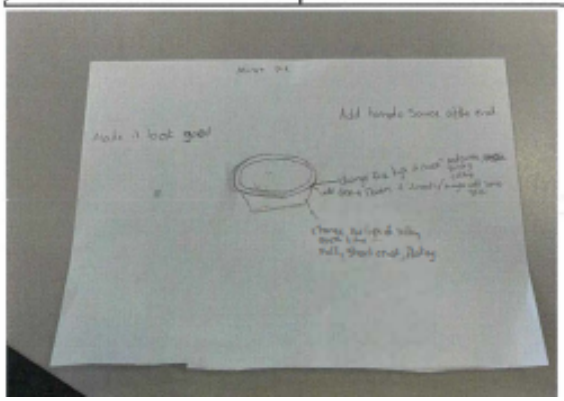
1. Where is my dad from? Born Adelaide, But grew up in Canterbury
2. Where are his parents from? Adelaide and Ashburton
3. What kind of food they have in those countries - nz food
4. What his favorite food is- BBQ Pork Belly burnt ends.

What type of savories he likes the most - sausage rolls, hot chips

5. What food do you like making the most - pork shoulders, leg of lamb, turkey, or burnt ends on bbq
6. What is the easiest thing you like making? Stir Fry
7. Do you like spicy food- Yes
8. What is the family go to? Spag bol
9. Where are your grandparents from? My Grandparents immigrated from Holland in the 1950s and there is a lot of dutch history in food in the family it normally comes out around christmas: Spacelas, Dutch christmas cake, Olie Bolin

IDEATION/CONCEPT DESIGN

IDEA	What I like about this idea	What i dislike about this idea	How I can adapt/improve this deas
Ollie bollin	It looks delicious	I don't know if i will have the time to let it rise	Add a savory filling
Pigs in blanket	Its savory and sounds yum	Feels too simple to make	Make a different outer shell
Pie	Delicious and sort of easy to make	Too big for finger foods	Maybe make them smaller
Bitter bollien	I like meat balls and they sound quite yum	Not sure how well i will be able to make it	Change some of the fillings or add something to make it taste differen
Empanadas	Looks delicious	Too many veggies	Add less veggies



TESTING & TRIALING

Class trials

recipe	
Cornish pasty 	I liked how filling it is and the flavors in it. I didn't like how there wasn't enough meat because it was overtaken by the veggies. I found it a bit challenging when we had to do the crimping. We used grating, combining, and rolling out the dough and then once the meat and veggies were put on the pastry and then we primped the sides.
Sausage rolls 	I like how easy it was to make and I like the taste of it when it has sauce with it. I dislike the taste of the meat with no sauce because I think it tastes a little bit minty and I also don't like the peas in it. We learnt how to plait pastry and I found it challenging when I was doing the plait's because it was hard to know what way it was supposed to go.
Samosas 	I really liked the filling in it, I disliked the fact that the pastry was a bit dry and crumbly. I found that it was quite interesting that we added curry powder to the pastry. We used the circle rolling process then cut it in half to put the filling in.
Spring rolls 	I liked how delicious they were and the crunch of the outside, I disliked when we were folding them and rolling them together because the flour glue was quite sticky and slippery so it was quite difficult, I found it iinteresting when we used a didifferent kind of pastry that we never used before and using flour and water as a glue to stick it together, we used the folding and rolling process to keep the filling in the inside of the spring roll.

Trial 1: mince pie

Functional attribute 1- outer layer	Functional attribute 2 - savory filling
	
Stakeholder feedback:  Next time i am going to add salt and add less onion	Finished product 

Trial 1: mince pie	
Functional attribute 1- outer layer 	Functional attribute 2 - savory filling 
Stakeholder feedback  Next time i will make sure that it has enough flavoring in the mince but keep the same pastry	Finished product 

Trial 1: mince pie	
Functional attribute 1- outer layer 	Functional attribute 2 - savory filling
Stakeholder feedback	Finished product 

STAKEHOLDER FEEDBACK & DECISIONS

He thinks it is a really good idea to make mince pies and is excited to try them when I make them.

FINAL OUTCOME

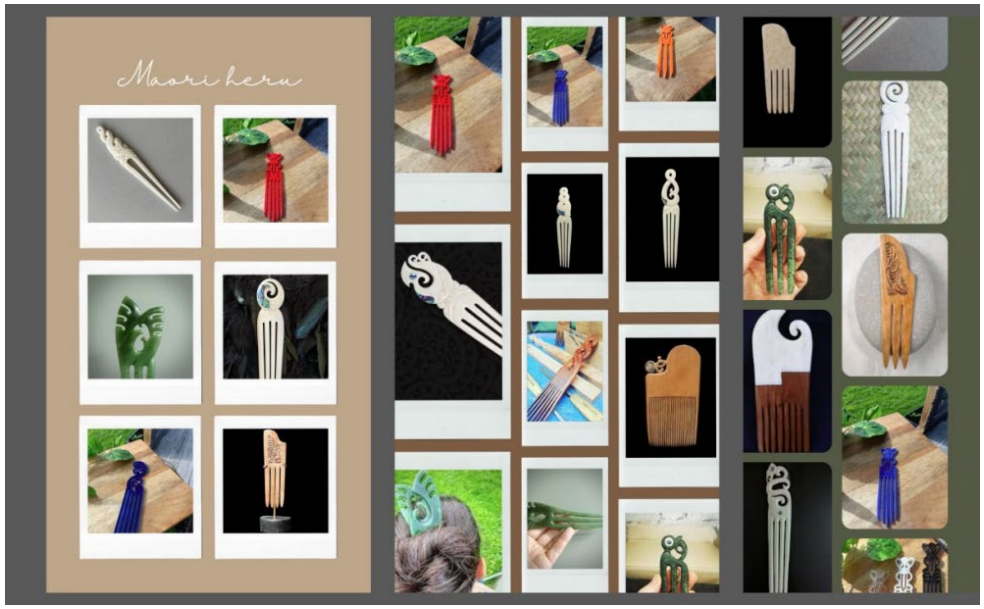
I believe I met the brief because I got told that the mince pies were really good and to maybe add cheese so I did and to add less onion so for my last trial I added less onion and added cheese. It was really good. This brought back memories for him from when he lived in Australia and eating mince pies like that. By making mince pies I showed manaakitanga by being generous for making my dad the pies that I made.

Specification	yes/no	Because
Edible wrapping/ outer layer to contain the filling	yes	I made a pastry for the outer layer
Savory filling, at least 3 components which reflect the culture of your whanau	Yes	It had mince, onions, beef stock, flour, worcestershire sauce, water
Able to fit in 1 hand	yes	I made it in a cupcake tin to make sure it was definitely able to fit in 1 hand
Served with dipping sauce	Yes	When i gave it to my dad he put tomato sauce on top
Affordable to make	Yes	It was just mostly ingredients from out of your pantry i think the most expensive thing in it would be the cheese which is up to you to add or not
Appealing and delicious	Yes	It looked very good when it came out the oven and it was really good i think it have the right amount of everything in the filling

	Grade: High Achieved
4	For Achieved, the standard requires the student to develop a Materials and Processing Technology outcome in an authentic context. This involves creating a fit-for-purpose outcome for a person, whānau, or community using a brief with specifications. These examples are partial extracts taken from two student folios. Both students have developed and ultimately created fit for purpose outcomes using technological practice. In the first sample, the student has tailored the brief by identifying four end-users and exploring the concept of cultural identity within a resistant materials context. Technological practice is demonstrated through research, ideation, mock ups, technique testing, and manufacturing, with the outcomes used to assess fitness for purpose. The physical and functional specifications were broadly addressed. However, additional evidence on the measurability of the physical and functional specifications would enhance the documentation. The second student has used a brief that identifies the purpose, end-user, and actual environment, and explores the concept of identity for a person in a Textile Technology context. A range of technological practices have been used to develop the garment with applied design, and the finished outcome has been taken to the place it will be used, to see how it works. As the student undertook technological practice, they were making decisions related to the outcome's fitness for purpose. Fitness for purpose is also demonstrated in the final photograph taken in the intended environment. The evidence also reveals how the requirements of the brief and physical and functional specifications were addressed. In both examples, additional evidence of stakeholder feedback gathered from another stakeholder during the technological practice is needed. For instance, the first student could have incorporated feedback from other recipients of the heru or individuals with expertise (such as teachers) as the outcome evolved. The second student allowed the end-user to make some decisions during development, but the feedback from this person, or any other stakeholder, is not seen in the evidence. A Merit grade also requires that the student explains the decisions that guided the improvement of the outcome.

Māori heru pieces

My need / opportunity - is to make a creative piece of work inspired by my culture and whanau.
My stakeholder
will be my whānau since my work will be gifts for them. I will base my work on kotahitanga and my whānau whakapapa each heru will be personalised to their personality and their story.
Brief / My outcome and expectations.
My goal is to create a Māori head piece / heru for each member of my whānau that will be true to them and their story. Each piece will carry out a story using māori designs that I will create. I will have to research about carvings and designs to help me create a heru. I will need to bless the heru before use/when you bless a heru you say a quick karakia the appropriate karakia would be whakapapa te hau. This will be functional that means it needs to be able to stay in the hair long enough when used for special association such as Kapa haka.



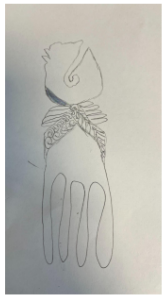
Concepts

The twist, or 'pikorua' as it is known in New Zealand, is a relatively new Māori symbol with design roots in nature. It's said to represent the path of life and symbolize the strong bond between two loved ones. It's a powerful expression of loyalty because the arms of the twist have no end point, just like lifelong relationships.

The reason I choose this design for my Mum is because she's always cared for my Dad her first love but another reason I choose this one for my Mum was because it was the design that I really felt had a connection to her because my Mum is very loyal to loved ones and I decided to take my own spin on the design. My mum is loyal and strong much like this design she has strength mentally and physically she was strong in sad times.

In pounamu carving the koru is said to represent new beginnings, growth and regeneration. We know it symbolizes the fern frond seen in New Zealand's native bush because of a Māori proverb that speaks of rebirth and growth:

There are two different designs here but i've decided to go with the one on the left because it really embodies my sister [redacted] she's young and every day is a challenge and different to the last. I've chosen the koru because it represents new beginnings and she has so many opportunity's which I know she will take and thrive.



The Manaia symbol is said to be a messenger between the living and the dead. They say this is because it's always carved in profile, with one half of its body in this realm, the other half in the realm of the dead. It was traditionally carved with the tail of a fish, body of a man, and head of a bird but nowadays there are many stylisd versions of this symbol lending themselves to the artist's design capabilities. A lot of people wear the Manaia symbol as a personal guardian with some saying it can protect against evil.
https://www.mountainjade.co.nz/blogs/news/traditional-maori-symbols-and-meanings-carving-ta-moko

I chose this design for my brother. The Manaia symbol I think really spoke to designing a heru for him. The bottom of the heru are challenge korus which represent difficult things my brother had to overcome.

Now with this design was very important to me because it's for my Dad. Me and my Dad are very close so I knew I needed to make this one very special. I did heaps of research and this is how the design came together. The two koru at the top of this design was inspired by new beginnings I decided to put two at the top for new beginnings for him but also new beginnings around him for the ones he loves. The koru facing down represent me and my siblings and how strong he always wanted us to be. The two koru in the middle are my parents and there love that is why they are in the shape of a heart (the sketch looks a little rough) the heart is also protected by a waka the symbol of always moving forward in life.

Feedback from my Dad / stakeholder

Are the designs easy to follow and why ?
Yes it is easy to follow because of the symbols

Does it fulfill its intended purpose effectively? **Yup but how will it stay in your hair**

Is it practical for everyday use or special occasions?
Yes for special occasions

What do you think of the visual appeal of the designs?
I like them because a lot of thought went into them

Are there any elements that stand out positively or negatively
Some of the shapes looks a little bit weird and hard to make "will change in real thing"

How does the design resonate with cultural values or traditions?
The koru pattern represents the forever circle and the top of the heru represent almost like a maunga Kinda like the maunga idea like our land and the koru could mean the river flowing to the sea or through the land

I created this mock up using clay so that I could get an idea of how thick, long I wanted the heru to be and because I wanted to see it in a more 3D form.






Refined designs based on feedback from my Dad

Old design


Old design


Old design


Old design


Production methods

Wood carvings
How to carve wood? You'll need tools carving tools such as carving knives chisels, veiner, Skew Chisel or Corner Chisel. Wood carvings

Resin
What is resin?-Resins are vicious, liquid polymers derived from organic or synthetic sources. Their benefit centers on their ability to transition from a liquid into a customisable solid, homogeneous structure.

How to use resin?
Get your supplies ready and put on your personal protective equipment if you're using it.
Mix a 1:1 ratio of Resin (1) and Hardener (2). ...
Mix slowly for 3 minutes. ...
Let your mixture rest for 2 minutes.
Remove any air bubbles with a torch. Resin

Bone carvings Bone carving
What do you need to carve bone?-The best tools for delicate bone carving are small handheld chisels. Chip carvers, micro carvers, block cutters etc are all good examples. The hard nature of the material means that for best results (and least wear on the tools) good quality tools are essential and pre-softening of the material is recommended.

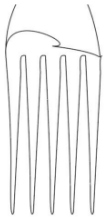
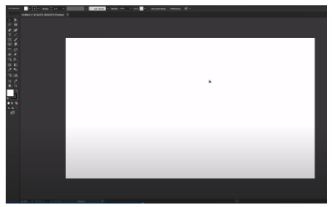
3d printing
How do you 3d print?- 3D printing
Create a CAD (Computer-Aided Design) file. The first step to creating a 3D printed object is creating a virtual design with computer software or a 3D scanner.
Convert the CAD file. Manipulate the STL file. ...Prepare the 3D printer. ...Build the object. ...Process the final piece.

How does laser cutting work? -Laser cutting is a type of thermal separation process. The laser beam hits the surface of the material and heats it so strongly that it melts or completely vaporises. Once the laser beam has completely penetrated the material at one point, the actual cutting process begins.

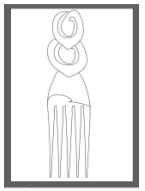
What do you need to laser cut?- a laser cutter, computer with a laser cutting software on it, Materials to cut and design Laser cutting

Adobe illustrator

I started with a blank A4 digital paper and started to design the comb, I created the first tooth of the comb and copied that one tooth and then placed them side by side until I had a comb with 5 teeth.

I then designed my first heru shape the pikorua design I created this design by drawing a koru pattern the copying it and placing it onto the bottom one and making the one on top smaller so that they did not overlap each other and fit perfectly into each other.



I created all my heru with the same process adjusting it slightly for each of my heru as they had different designs. I made sure that all the heru had to same comb so in order to keep the heru easy to use.

Stakeholder feedback

My first go of cutting out my heru was unsuccessful although I did get some good feedback from Dad. The comb size was a little too thick but it did fit in the hair but it felt a little to thick it was also too big and wide. It also didn't cut through the wood properly.

Improvement
Based on my stakeholders feedback I'm going to take in the heru so they fit better in the hair and also make the comb thinner so they stay put into the hair. I will also go around the heru with a red line so the laser cutter cuts out what I want cut.

My second attempt

As I tried my second attempt at my heru I tested out different sizes of plywood.

- 1.5mm ply
- 3mm ply
- 6mm ply

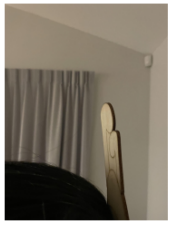
I preferred the 3mm ply over the 6mm and 1.5mm because the 3mm fit well in the hair and wasn't too thin like it was gonna snap in my hair but sat way more comfortable in my hair unlike my 1.5mm ply.

The 1.5mm was way too thin and felt like it was gonna snap in my hair opposed to the 6mm ply that was way too thick and looked massive in my hair as well as not sliding in my hair properly.

Final evaluation.

At the end of my project I had met my brief and made four heru pieces as gifts for each of my whānau members. Each of my heru had a specific story true to my family and their story. I created a different special design that meant something to each person. Throughout the project I got feedback which really helped me along the way I definitely needed to change my designs after hearing different opinions. My need/opportunity was to create heru pieces inspired by my culture which I portrayed very well with my research behind each heru. I used 3mm plywood, each comb was 30cm long and 9cm wide with 5 teeth.

If I was to create this product again something I would do differently would be using a different material and trying new ways of making my heru for example carving bone, wood, or even plastic. Another thing I would do differently is try out colours and more designs enough for a whole rōpu.



Interview: why is this person important to me and The Authentic purpose

My mum is important to me because she takes care of me and is always there when I need her she is so strong and she does everything she can to take care of me and my sisters. She is also working so hard at her new job so I want to make a hoodie for her to keep her warm at work on cold days.

Problem
She doesn't have much hoodies to keep her warm for work

Authentic purpose
I wish to create a hoodie for my mum to keep her warm on cold days when she is at work. My mum loves bees and the colours green and yellow. Her birthday was on Anzac day so i might give it to her as a Christmas present.

specifications

- Yellow and green colours
- Bees, flowers
- A zip (easy to remove at work)
- Fluffy fabric inside (to keep her warm)
- Hood (to keep her head warm)
- Cord for the hood
- A little over sized
- Ribbing
- Big warm Pockets

Measurements and special features

bust	66.5cm
Hips	46.5cm
waist	40cm
Shoulder and arm	64cm
Center back	64cm

I will be using an XL or L but make it a little bigger for comfort wearing this and adjust the pattern if needed hoodie because my mum wants an oversized hoodie.

Special features

- String in hood
- Big hood
- Small bee (screen printed)
- Ribbing
- Fluffy inside
- yellow

Testing

- Test the fabric (warmth)
- Different zips (if adding)
- Stretch and how long it can last
- Shrinkage
- Colour fastness

Ideate

- An oversized hoodie to keep her warm/Fluffy fabric to keep her warm
- A zip up hoodie so It's easy to take off
- Pockets for stuff she needs to carry around with her
- A big hood for her head to keep it warm

The design process

Empathy
My Mum is working at XXXXX now so I want to make a hoodie for her to keep warm on cold days

Problem
She doesn't have much hoodies to keep her warm for work

Ideate

- An oversized hoodie to keep her warm/Fluffy fabric to keep her warm
- A zip up hoodie so It's easy to take off
- Pockets for stuff she needs to carry around with her
- A big hood for her head to keep it warm

Testing
- Test the fabric (warmth)
- Different zips (if adding)
- Stretch and how long it can last
Shrinkage
- Colour fastness

Mood board 1: my clients identity

Mood board 2: types of hoodies

About my mood board 1 & 2

My mum grew up in a family of 4 kids (including her) She is 45 and a mum of 3 kids, me and my two sisters. We live in XXXX. She loves bees and watching the sunset at the beach with me and my younger sisters. She grew up with a family of three sisters. I'm not fully sure if she is half Samoan because my dad is Samoan.

Mood board 2 is full of different types of hoodies like

- Cropped
- knitted
- normal
- Zip ups
- Extra long hoodies

And those combined to e.g. cropped zip up
There are lots of different hoodies to fit everyone and their personality. I personally like wearing cropped hoodies for my dancing so it's not too hot and I wear them to look nice but mostly I like wearing oversized hoodies. There are negatives and positives to all hoodies as well.

Hoodie fabrics

Sweat shirting 65% polyester 35% cotton

The sweat shirting fabric is soft and warm on one side and smooth on the other. You have more options of what applied design to do because you can do screen printing on the smooth side. The polyester gives strength and the cotton gives warmth and softness.

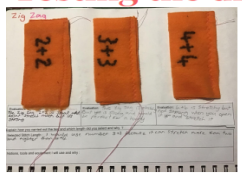
Jersey knit 100% cotton

The jersey fabric is very thin and would be very cold in the situation we are making the hoodie for. But it would make a perfect summer hoodie.

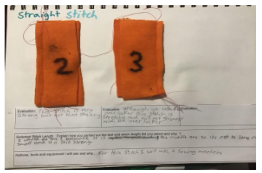
Polar fleece 100% polyester

Polar fleece is a thick fabric that's fluffy on both sides. It is very warm and soft great for a hoodie but you have less choices of applied designs because you won't be able to do a screen print on the fluffy fleece but it would be suitable for embroidery or applique.

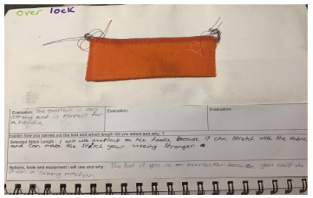
Testing the different stitches



Evaluation: 2+2 is small and strong doesn't stretch well though. 3+3 is the perfect stitch for a hoodie because its strong and stretchy. 4+4 is stretchy but could break after a few washes.
Selected stitch: The selected stitch is 3+3 because its strong and stretchy



Evalution: 2+2 is very strong and a great stitch and will be very stable. 3+3 is stable and also strong when you pull on it and has a bit more stretch than 2+2



Evalution: The overlock is very strong and is perfect to make any stitch stronger

Selected stitch: is the over lock on the hoodie because it can stretch with the fabric and can make the stitch your making stronger

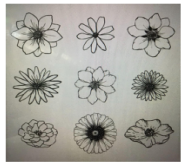
Fabric choice

The sweat shirting fabric is soft and warm on one side and smooth on the other. You have more options of what applied design to do because you can do screen printing on the smooth side. The polyester gives strength and the cotton gives warmth and softness. I chose to use the sweat shirting fabric because It's warm because of the fibre. and And I think the smooth side will give a nice finished look when its done. I also chose this fabric because the polar fleece is really thick and would be hard to work with at times. And there is a bigger variation of applied design ideas I can look forward to do on the hoodie. My client chose this fabric because Its light weight and feels super comfy.

65% polyester 35% cotton

design ideas (screenprint) and applied designs

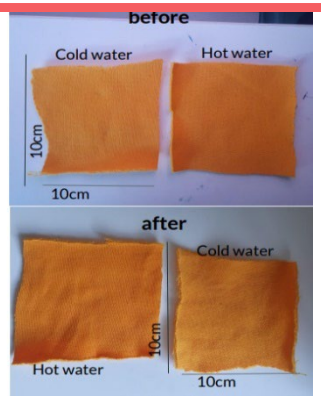
These were design ideas I show my client and she wanted to see them on the 4 concepts to see what they would look like to make her chose but she loved the bee and the idea of flowers on the hoodie. She did think the flowers were a little boring. I think I'm going to do screen printing cause I think it would be easier if she chooses the bee and she also wanted it. The other applied designs to choose from was embroidery and Applique. Embroidery is hand sewing in lots of different ways. My client disliked the look of the embroidery but did like how creative you can be with the design and colors. Applique is when you cut out a piece of fabric and hand or machine sew it to a garment. My client loved this idea and she choose it before the screen print.



Shrinkage test

The shrinkage test is to wash the chosen fabric and see if it shrinks. I did one hot and one cold to see if they would shrink and made sure to cut them accurately 10 x10 so it would be easy to see if they shrink.

After hot and cold results they are the same they are still 10 by 10. So it is a non-shrinking hoodie fabric perfect to be washed.



Screen printing

For the Applied design I decided to go with screen printing because it would have a nice effect with the fabric and it is fast and easy and cute.

The results from the screen printing were great we did testing on white woven fabric and then made little changes for the testing on hoodie fabric then fixing some little things like another line you can see in the photos onto the real hoodie and it turned out great.

4 Concepts

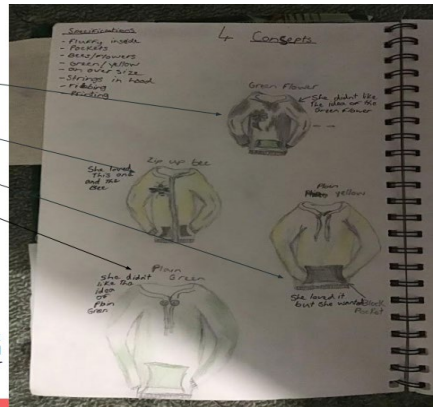
- Black hoodie with green flower
- Yellow with bee
- Plain yellow
- Plain green

specifications

- Yellow, green
- Bees, flowers
- A zip (easy to remove at work)
- Fluffy fabric inside (to keep her warm)
- Hood (to keep her head warm)
- Cord for the hood
- A little over size
- Ribbing
- Big warm Pockets

Feedback

My client loved them all but she thought the plain yellow and green were a bit to plain. She also didn't like the idea of the black with a green flower although she loved the flower idea. She loved the yellow with the bee because she said it brings out her love for bees and the colour yellow



This is the finished product of the hoodie. We did decide not to go with a zip but it still works perfectly. This photo was taken at XXXXX garden which is where my mum works. This product is suitable for my client it has warmth, it's a little oversized and has a bee that she loved. I chose this bee design to represent my clients love of bees and the garden. This chosen fabric was the type of fabric that I could do a screen printing on.

- A zip (easy to remove at work)
- Fluffy fabric inside (to keep her warm)
- Hood (to keep her head warm)
- Cord for the hood
- A little over size
- Ribbing
- Big warm Pockets

Except for the zip to make a fast and easy to put on hoodie, I would say it meets the specifications very well. The big hood, yellow, bee print, warmth, drawstring in hood and ribbing are all a success.

Finished product

	Grade: Low Merit
3	For Merit, the standard requires the student to refine a Materials and Processing Technology outcome in an authentic context. This requires feedback from more than one stakeholder at more than one stage during technological practice to inform the development of the outcome. An explanation of the decisions that inform the improvement of the outcome's fitness for purpose is also required. The student has taken a brief provided by the teacher and customised the specifications to suit their own social and physical environment. They have applied Technological Practice within a Materials Technology context. From the beginning, the student has gathered and described feedback from stakeholders. At various stages, this feedback has been used to inform the development of the light’s function and aesthetics. These decisions are broadly described and contribute to improving the light’s fitness for purpose, such as making it more visually appealing and ensuring the switch is easily accessible. For a more secure Merit, the student should go beyond merely describing the feedback verbatim. They should more clearly demonstrate the reasoning behind the decisions made based on stakeholder opinions.

Brief - Specifications

Physical / aesthetic

- Must have a dark blue light diffuser.
- Must have a laser etched / 3d printed design that I like.
- Very easy to turn on and off.
- Weight doesn't matter because the desk is very strong\stable and won't be moved very much.

Functional

- All sharp edges must be removed.
- Must fit in the conner of my desk that is 800mm x 1500mm.
- Must have feet that wont slide around and Scratch my desk.
- Wont break from a 1.2 m drop.

Brief

- I intend to make a very eye pleasing and stylish light that projects and image or sentence on my ceiling. I will make this to solve the problem of an empty space on my desk that doesn't get used and looks very boring / plain.

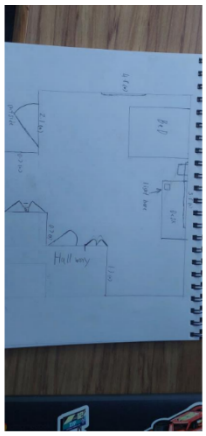
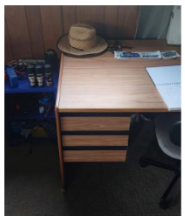
Social & Physical Environment

Social

The light will only be used me because I am the only one that enters my room. I will be using it when I am watching tv in my room. I am 14 years old I like cars and sports I also like to have quite a chill vibe in my room, so I think I want my light blue.

Physical

The environment that the light will be in is an indoor private space. The light won't be in a very high traffic area it will sitting on my desk that doesn't get walked past very much.


Stakeholders

[redacted] (Brother). I want him to be one of my stakeholders because he is a past student and has done this project a few years ago and he works in an engineering workshop, so he is the perfect stakeholder.

[redacted] I want him to be one of my stakeholders he is a good honest student and will give good true feed back.

[redacted] I chose him to be one of my stakeholders because he will but truthful and criticize my work very well.

Research:

Existing outcomes

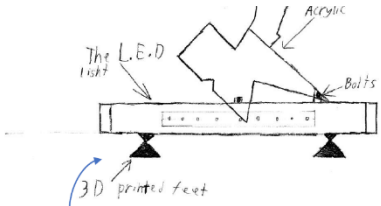
Analysis of stakeholder feedback

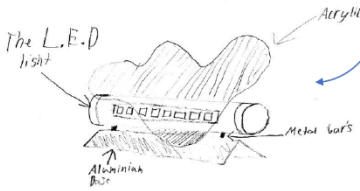
Stakeholder
My stakeholder said that they would be very hard to make and design in fusion.

Stakeholder
My stakeholder said that these lights are very old fashioned so the way they were made probably wouldn't be very economical. Also, they would have to go into an old styled room.

Stakeholder
My stakeholder said that these designs were very unique and funky but would have to fit in the room very fell and go with the vibe of its surrounding.

Concept Development

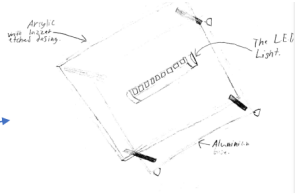


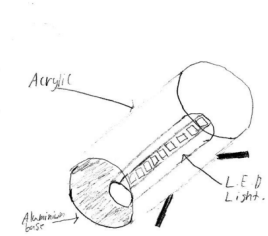


Concept 1.
My stakeholder [redacted] said that it could be top heavy and unstable he also said the shape is weird and doesn't cover the light properly. Another thing he said was that having a tight bend in the aluminum could weaken it.

Concept 2. My stakeholder [redacted] said the acrylic could break very easy so it won't be very good for where I will have it because it is like a metre drop to the floor. He also said that the light doesn't serve very much purpose. Another thing he said was that the shape of the acrylic is not very pleasing or cool.

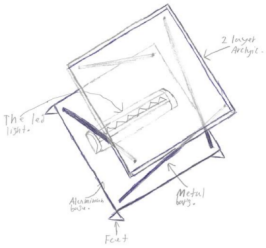
Concept Development





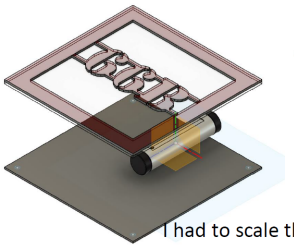
Concept 4. [redacted] said that the shape is a bit boring and that there isn't really anything interesting about it but with a cool laser etched design it might change. He also said that the edges could be sharp and get stuff caught on it and asked how do you get to the switch to turn the light on.

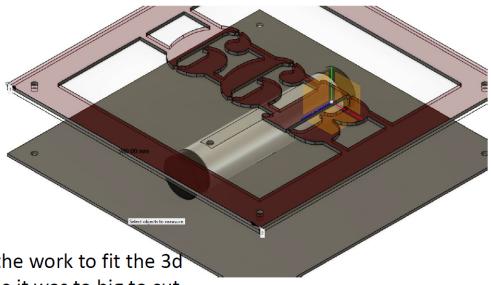
Concept 3.
[redacted] said that the light will make the room a cool colour and project well, but he also said that it might be hard to mount the acrylic to aluminum. Another thing he said is that not having legs on it means it might roll around a bit and damage the table.

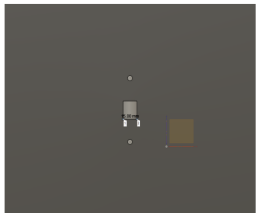


Concept 4 pt2. I went back and redesigned the concept of it to add more features like the angles and the other layer of acrylic to make it less boring. I will also think about how to easily get to the switch for the light

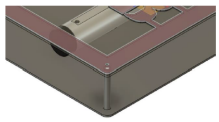
Functional Modelling



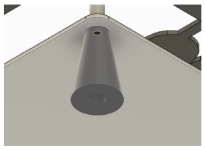




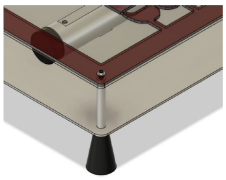
I had to scale the work to fit the 3d printer because it was to big to cut.



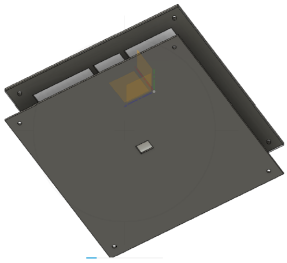
I rounded the Corners and added bars



I put In feet that have holes in them that are made to the size of the bolts.

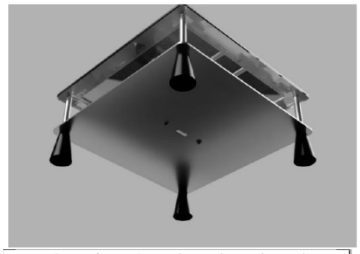


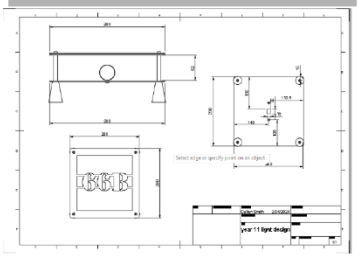
I added in bolts that thread into the bars.

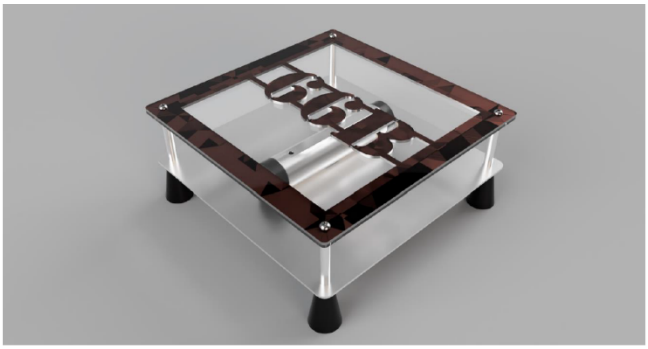


The little hole at the bottom of my work is a hole that is measured to fit the light switch in the real world.

Final Design

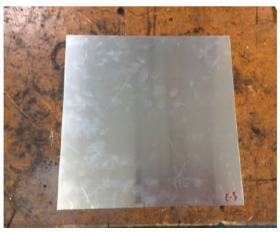






My stakeholder said that the design of the light is still a little boring and it would be better if I added something more to the light to make it more interesting.
Overall, he said that it will turn out really well.

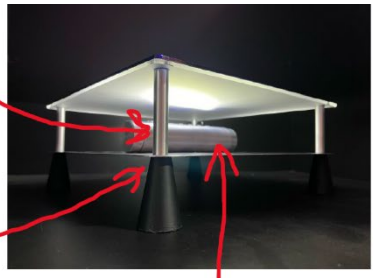
Outcome Development and decisions

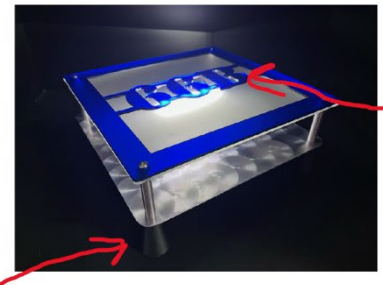


The design for my base was simple but yet effective. I did not put ant curves in my base so to make it more appealing Mr [redacted] recommended that I use a scouring pad to make a design scored into the aluminum, I liked this and decided to add on the base to my final design because it made the lamp more exciting to look at.
When I was designing my base on fusion I had an idea to make a little cut out in the bottom of the base so the switch fits through it perfectly. To do this I had to measure the switch in real life then transfer it into fusion 360. I decided this was a way to make the light more easy to use.

Analysis of Outcome

- Key Features



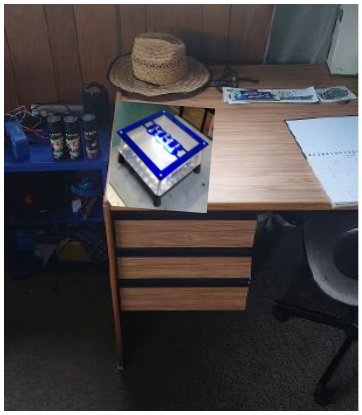


Analysis of Outcome

specifications	Final analysis
Must have a dark blue light diffuser.	This specification has been fully met I was able to get the exact color of acrylic for my light defisur I wanted. The clear acrylic under neath the main light defuser really makes the colour of the top layer really stands out. My brother said dark blue is the right colour to match the environment of my room.
Must have a laser etched / 3d printed design that I like.	This specification has been fully met I am very pleased with how my Acrylic turned out. Instead of Lazer etching into the acrylic I decided to cut it out I thought it would stand out more than etching it.
Very easy to turn on and off.	This specification has been fully met I spent a lot of time making the height of the feet so that a person's hand fits nicely underneath the light to turn it on and off. I did this by measuring mine and my classmates hand height. I also went with the little black switch because it was easier to turn on and off.
All sharp edges must be removed.	This specification has been fully met [redacted] recommend me to use the plate shears to round the edges for my base I trusted him that this will work because his base is round and his turned out really well. My corners turned out well also as I gave them a little sand down just to smother then of a little more.
Must have feet that wont slide around and Scratch my desk.	This specification has been partially met This was only parsley meet because I have very nice 3d printed but there are no rubber bits on the bottem of the feet to stop them sliding around and scratching my desk. To do this I would of had to bring in supplies from home to put on my feet but I didn't have any thing at home to do this.
Wont break from a 1.2 m drop.	This specification has not been met This is not meet because I am not willing to test that if it durable enough to withstand that drop but I believe that I will withstand the drop because I have built it very strong.

Analysis of Outcome

- Modelled Environment:



During the prosses of making my prototype I was given lots of ideas, feedback and recommendations to make my final design better. I used all of the feedback, ideas and recommendations I was given for example [redacted] told me to keep the design simple but interesting so I could spend more time on the little things of my project so the final design would turn out better. I really took this into consideration and I'm really happy I did because I think that my design is simple but very interesting and that gave me time to do stuff that other could not for example being able to use the scouring pad on my aluminum base which looks awesome
Overall, my stakeholders said that that the design is awesome and that it projects the image on the roof really well. The only thing mentioned is that my switch does not line up perfectly with the hole I made for it but they said that this is alright because it is on the underside of the light so you will only see it if you are looking for it.

	Grade: High Merit
2	For Merit, the standard requires the student to refine a Materials and Processing Technology outcome in an authentic context. This requires feedback from more than one stakeholder at more than one stage during technological practice to inform the development of the outcome. An explanation of the decisions that inform the improvement of the outcome's fitness for purpose is also required. The student has utilised a brief that identifies the purpose, end-user, and intended or actual environment, while exploring the concept of identity for whānau. They have applied Technological Practice in a Processing Technology context. Stakeholder feedback has been used to inform the development of the spring roll, documented in writing, and sourced first-hand as the recipes were tested and the final outcome was presented to the whānau. Multiple stakeholders were consulted at various stages during development. The student has explained the decisions made during development and how these decisions informed the improvement of their outcome. These decisions have led to successful improvements, such as a crunchier pastry, more palatable filling, and less vinegary dipping sauce. To achieve Excellence, the student could analyse, explain, and interpret (rather than just apply) the stakeholder feedback and how it informed the development of the outcome. The final evaluation of the outcome against the brief could also be more specific about how the specifications were met (or not met) and how the outcome can be considered fit for purpose.

I am designing and making a savoury food product that represents the identity of my family.

Specifications

- Have three components:
- An edible “wrapping” or outer layer
- A savoury or sweet filling
- Served with dipping sauce
- Able to fit in one hand
- Appealing to look at
- Delicious to eat
- Affordable to make
- Suitable family recipe to pass on to your whanau.
- Be served to your whanau at home.

Interview with my stakeholders (Mum, Dad and my borther). I made some questions and they gave me answers to guide my design

- Mum was bron in England and Dad was raised in Papua New Guinea. My brother was born here.
- No one has any allergies
- They all like to try new foods
- Mum and Dad like fruit and my brother prefers to eat vegetables
- They don’t like anchovies, tofu, eggplant and olives
- I found out that my family is really interested in Asian foods. They also like fried rice alot
- Hoisen sauce was new to me. I thought that my Dads favourite sauce was a honey marinade but its Hoisen sauce.
- All my family members said that they liked herbs and spices so I need to keep in mind that they enjoy herbs when designing my food product. My dosen’t like things too spicey.

First trials we did as a whole class to try different ways to wrap fillings.

Paper Modeling - wrapping and folding

In class we made different shapes, we were able to be creative and by doing this it allowed us to see what the different shapes advantages and disadvantages were. It is important for us to test these different shapes out so then when we make our final prototype we will know which shape best fits.

We then trialled some recipes with the different shapes and different fillings to see what worked and what didn’t.

Fruit puff pastries

This wasn't complicated and I enjoyed the taste of the finished product, we were able to be creative and make lots of different shapes, Including triangles, squares and ovals. The combination between berries and the pastry tasted good and had a nice texture which was a little bit hard on the outside and soft in the inside. I also liked the finishing touch which was adding icing sugar. My favourite shape was the bottom triangle one in the photo, I liked this shape as it was able to hold the inside ingredients, I think this would be a good shape design for this meal.

Dumplings

This design really fitted the paper modeling and - wrapping + folding design, I used the steam fry technique and I enjoyed it but I tried some of the deep fried dumplings and I preferred them better as it was crunchy on the outside and moist on the inside.

Green thai curry filo pastry

I enjoyed making these but I don't really like green thai curry so I didn't like the taste of the final product, although I really enjoyed the taste and the texture of the pastry but not the inside, we also did not have enough time and I don't think it was cooked enough. I would try making this meal again when I have more time.

Samosa

I made the Samasos with other in class. I really enjoyed them the only part that was annoying was how long it took us to fold them into their shapes. I would like to make them again. I liked the ingredients used, we added lots of salt which I liked. We deep fried them and they nice and crispy.

Bacon and egg pie

I really enjoyed making our own pies and being independent and writing our own recipes and choosing our own ingredients. My pie was bacon and egg and I liked the end product. A couples things I would change was adding more salt and maybe adding a herb in there and it also needed to cooked for longer.

Developing the idea for my savoury food product

Feedback on some concepts

Concept	Short description	What do you like about this idea?	What do you dislike about this idea?	How could I change or improve this idea?	Summary - which is your favourite concept/s
1	Hash browns bites wrapped in bacon with maple syrup	Sweet and savoury I think the flavours will go well together	Im not to sure about the portion sizes I need to figure out a sizing for each one	Use a different wrapper	My family most liked the sound of concept 4 which was the Vegetable and beef sprince spring rolls served with swet chili suace. My family really likes mince and they enjoyed spring rolls.
2	yorkshire pudding with kumara and mash potato mixed together with gravy	An intersting combination and the flavours would be yummy mixed together	Has a lot of english culture	Add in cheese to go with the mash potato	
3	butter chicken pie with kumara on top instead of potato with tomato suace	A different combination and would be interesting to see if the ingredients go well together	Not sure if they flavours will go well together	Test out which one is better wether its Kuamara on top or potato	
4	vegetable and beef mince spring roll with sweet chilli suace	I think the suace would go well with the vegetables	Its an original suace	Have different pastries	
5	Rice and chopped vegtables inRice paper rolls with ginger, soy suace and sweet chlili suace	I think the suaces and the vegtables will go well together	Mums not too keen on rice so woudnt be a good meal for her	Have a different filling that all my family likes such as a meat	
6	yorkshire pudding filled with lamb and ontop of the lamp with a maranade cotained of herbs and spices.	Lots of different tastes and textures	Dont know how I would present the lamb in the pudding	I dont really like herbs and spices but my family does	
7	Falafel wrap - A wrap that includes falafel balls, hummus, salad, and a yogurt-based sauce wrapped in a flatbread.	Different textures and Different ingridients used.	Dosen't really represent my culture that well	Have a different suace that replaces the hummus	

Recap - Brief Development

WHAT To design a food product that reflects the history of my family and represents my family

WHY We get to find out more background information about my family's history and the more we know ourselves makes us more strong designers and also makes us better with making our own recipes, more skills in the kitchen.

WHO The members of my whanau who are giving me feedback are my dad,mum and my older brother. My friends, XXXX and XXXXXX and my teacher will also help me develop my product with taste testings and advice on my cooking.

HOW After interviewing my whanau, alongside the specifications from my teacher, I need remember to

● Include cultural ingredients commonly used in the following countries: England and Papua New Guinea

● Use cooking techniques typical of these countries, such as: Roasting, stewing, frying

● Keep the spice/heat tolerance as: mild

● Not to include anchovies, tofu, eggplant and olives as these are ingredients members of my whanau won’t eat

● Include one/some of these favoured ingredients: Hoisin sauce, chilli sauce or fried rice

● Keep the size no bigger than my hand

Results from my filling tests

Final Recipe for Beef spring roll filling

- 2 leafs Cabbage
- 1 leaf spring onion
- 150g minced beef
- 1 carrot
- ½ thumb size of ginger
- ½ squeezed lemon juice
- 1 tsp crushed garlic

1. Cook mince in a medium frying pan on a medium heat.
2. Grate carrot, ginger, dice cabbage, spring onion
3. Once the mince is almost cooked, add in vegetables and stir.
4. Squeeze lemon juice on the top and mix crushed garlic in with the other ingredients.
5. Once all stirred take of the heat.
6. Dish up and enjoy.

Feedback received from classmates

Positive comments	Negative comments	Other ideas/suggestions
The flavours and textures went really well together.	Mince was a little dry and needed another flavour.	Adding lemon and garlic to add more flavour.

My evaluation and next steps:

The texture of the first test was good, but it was a little bit burnt I didn't taste too much of the burnt bits but it was dry but then I took XXXXX's advice and added lemon.
For the second test it had the right about of lemon in it which just made the flavouring a lot better. I will keep the leon and add garlic to the last test.
For my prototype I will add lemon and to my recipe to make the flavourings stronger and better.

Sample A: Beef mince and my recipe vegetables
Sample B: Added ½ squeezed lemon
Sample C: Same as sample A and but added Lemon and crushed garlic

Results from these tests

Sample A: Filo Pastry
Sample B: Puff Pastry
Sample C: Wonton pastry

Feedback received from my classmates

Positive comments	Negative comments	Other ideas/suggestions
Textures for puff pastry and filo pastry went really well. The filo pastry had a nice crispy texture.	After a while the puff pastry got a bit sickly to eat. The wonton pastry was really hard to cook right	To have different shapes on the plate to make it look more appetising.

My evaluation and next steps:

The texture was crunchy and went well with my mince filling. I enjoyed the taste with both the fillings.
I agree with my feedback I agree that the filo pastry went best for my filling.
So for my prototype, I will need to adapt my recipe by choosing the filo pastry

Testing my dipping sauce recipe

Base recipe

- ¼ cup rice vinegar
- ¼ cup water
- 1 Tbsp sugar
- 1 Tbsp Sambal oelek
  ½ tbsp cornstarch + 1 Tbsp water

- Add the rice vinegar, sugar, water and sambal oelek to a sauce pot, heat and stir the mixture over medium heat until the sugar is fully dissolved.
- Stir the cornstarch into the 1 Tbsp of water until dissolved, then pour it into the sauce pot with the sweet chili sauce. Continue stirring and heating until the mixture comes up to a simmer, at which time the cornstarch will thicken the sauce and it will go from appearing cloudy to then becoming clear.
- The sauce will now be ready, enjoy.

Sample A: base recipe
Sample B: added ¼ teaspoon of paprika
Sample C: added 1 teaspoon of sugar

Feedback received from my classmates

Positive comments	Negative comments	Other ideas/suggestions
The flavours were good, after the sugar was added it was sweet and not sour.	The original sample we had wasn't the best as it tasted too vinegary.	Adding more sugar or adding less vinegar to make the overall sauce balanced.

My evaluation and next steps:

The taste was alright but it needed to be improved, the texture was like original sweet chili sauce so that was good. To make it taste less bitter, an idea was to add more sugar so I did this in my second test and it made the sauce a lot better and nice and sweet. For my prototype, I will need to adapt my recipe by adding sugar to make it less bitter and more sweet.

Final prototype recipe

Ingredients:

Filling:
- 2 leafs Cabbage
- 1 leaf spring onion
- 150g minced beef
- 1 carrot
- ½ thumb size of ginger
- ½ squeezed lemon juice
- 1 tsp crushed garlic

Wrapper:
- 6 filo sheets

Dipping Sauce:
- ¼ cup rice vinegar
- ¼ cup water
- ¼ cup sugar
- 1 Tbsp Sambal oelek
- ½ tbsp cornstarch + 1 Tbsp water

Complete method:

1. Cook mince in a medium frying pan on a medium heat.
2. Grate carrot, ginger, dice cabbage, spring onion
3. Once the mince is almost cooked, add in vegetables and stir.
4. Squeeze lemon juice on the top and mix crushed garlic in with the other ingredients.
5. Once all stirred take of the heat.
6. Set up filo pastry sheets
7. Add filling into the sheets and fold into spring roll shape or any shape you desire.
8. Once they are all folded, put them into a deep fryer and wait until a golden and crispy look.
9. Take them out once they have reached the amount of time that they need to cook.
10. Damp with paper towels to decrease the amount of oil.
11. Now for the sweet chili sauce .
12. Add the rice vinegar, sugar, water and sambal oelek to a sauce pot, Heat and stir the mixture over medium heat until the sugar is fully dissolved.
13. Stir the cornstarch into the 1 Tbsp of water until dissolved, then pour it into the sauce pot with the sweet chili sauce. Continue stirring and heating until the mixture comes up to a simmer, at which time the cornstarch will thicken the sauce and it will go from appearing cloudy to then becoming clear.
14. The sauce will now be ready, enjoy.
15. Dish up and enjoy.

Evaluation - Was my dish fit for purpose?

My spring rolls had Filo pastry, A mince, vegetable, lemon juice with a sweet chili sauce as my dipping sauce. This dish was very easy to hold, and it fitted into one hand. The golden and crunchy look to it made the meal look appetizing. I know that it was delicious as I tasted it, and my family also tasted it and they demonstrated their appreciation by telling me how much they enjoyed the spring rolls. If I were to calculate my ingredient costs, I think it would be cheap as I could get some of the ingredients (vegetables) from school and from home. It is a suitable meal for my family as it was mixed with Papua New Guinea and England foods. It was also quick and easy to prepare and cook.

Mince is an important ingredient to put on a plate with food in Papua New Guinea and England. This is where I got my ingredients from to make my spring rolls. I fried them in a deep fryer. It included lemon, beef mince and vegetables so my family would enjoy the taste. Overall my family and I loved these spring rolls, and they would like me to make them at home for lunch or dinner.

	Grade: Low Excellence
1	For Excellence, the standard requires the student to evaluate a Materials and Processing Technology outcome in an authentic context. This involves analysing how stakeholder feedback informed the development of the outcome, and evaluating the outcome against the brief with specifications for fitness for purpose in the actual or modelled intended environment. These examples are partial extracts from three student folios. All students have worked within different technological areas to develop a fit for purpose authentic outcome that meets all criteria for Excellence. The first partial extract reveals how the student has considered and then applied relevant stakeholder feedback to inform the development of the shoe rack for the whānau. To secure the grade, the final evaluation could more explicitly assert the outcome’s fitness for purpose. For instance, it would be beneficial to demonstrate the measurability of the physical and functional specifications by providing detailed information on the exact materials used, weight, construction methods, adjustability, and ventilation. The second extract also effectively demonstrates the creation of an authentic technological outcome, guided by analysis of relevant stakeholder feedback. The student has continuously assessed the outcome's fitness for purpose throughout the process and upon its completion. Additionally, the student has provided sufficient detailed information about the materials used and the sensory toy's physical and functional specifications, ensuring it fully meets the criteria for an Excellence grade. The final extract shows ongoing analysis of how stakeholder feedback informed the development of a food outcome to be included in a hamper.

1. Design Brief

Context
You are required to design and make a storage solution (project/outcome) for yourself, Whanau or the community. You will need to make this in the school wood workshop.

Brief
What are you planning on making?
Shoe rack
Who will you be making it for?
Mother
Why do you or others need this? In my culture we do not wear shoes inside the house. We have a number of shoes lying around the front door which my mother finds messy.
When do they need this? End of term 2
Where will they be used? Outside the front door
What cultural beliefs does the user have? Yes see above

What are you planning on doing? I am going to make a shoe rack which can be used to keep the shoes we leave at the front door organised and tidy.

Stakeholders
Who are the people you will involve in the designing and making of your project/outcome
Mum, Dad,

- Environments
- What environments will be used?
- Making School workshop, Storage, share tools, work with others to keep the workshop safe and clean
- Use Backyard, Water proof, easy to clean, sealed,
-

I will need to use the school workshop. This will require working with other students so I will need to be safe and share tools and machinery and spaces. I will also need to keep the work area tidy and put tools I use away.

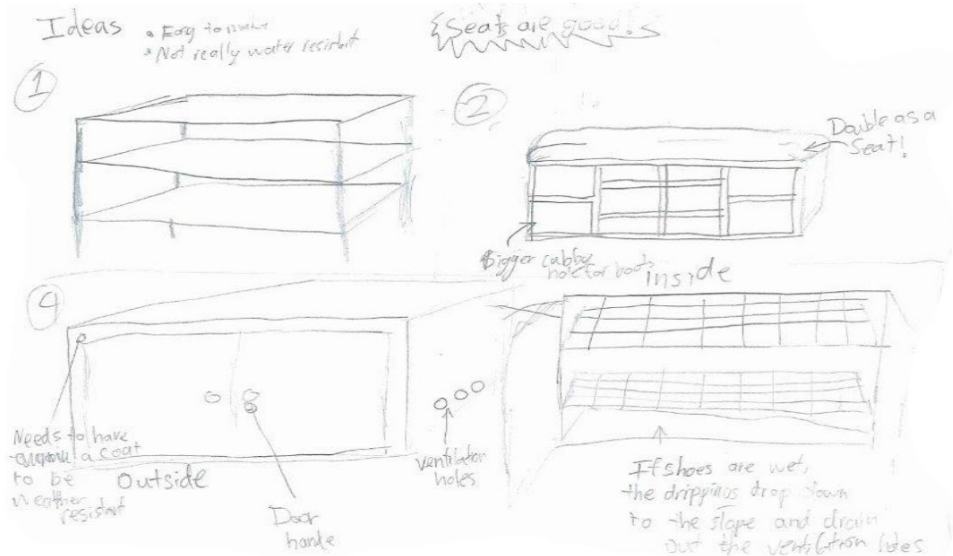
  - I will use the outside the front door and although it is covered it will need to withstand the weather and dirt from the shoes. I would also like it to be easy to clean

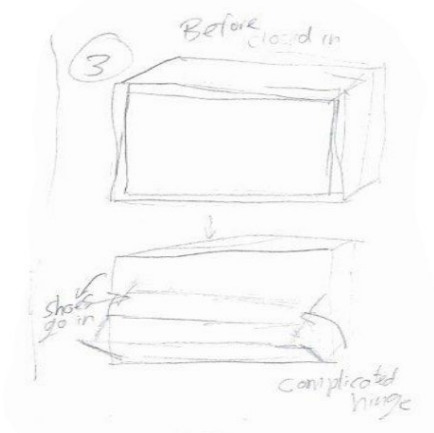
- What Physical requirements will the outcome need
  - Box shaped, strong, light to carry, waterproof and easy to clean
  - The shoe rack will need to be big enough to fit the 6 pairs
  - It must be strong enough to hold the shoes without breaking
- The shoe rack will need to withstand water and dirt
- The shoe rack must be as light as possible
- The must be easy to clean

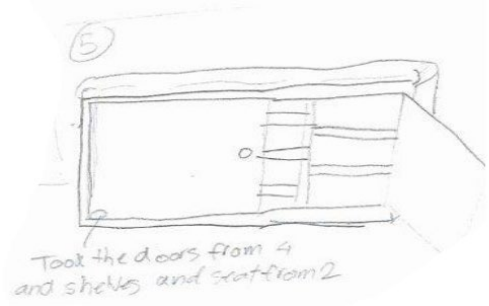
What Functional requirements will be need
Open lid and a draw, lockable to keep safe to stop things falling out, Handle

- The shoe rack will have stop to stop the shoes falling out
- The shoe rack will have feet to keep it off the floor and stop water from being puddled under it.
- The shoe rack will be made so that it is easy to put in and take out the shoes
- The shoe rack will have a way of cleaning dirt and other things off them before they are put in the rack
- The shoe rack will have air vents to help the shoes to dry if they get wet.

INITIAL IDEAS







Stakeholder feedback for ideas

- What do you like about the idea and WHY?

"I like how in designs two and four have a backing, so the shoes won't fall to the other side. The drainage system in design four is pretty good idea to have on a rainy day."

"I like this one because it has mesh inside to help drain water from wet shoes. Because I think this idea would be useful."

- What do you dislike about the Idea and WHY?

"I don't like the door idea; I know it would be useful to get rain off the shoes, but I don't think in daily use it would be worth the hassle to open and close the cupboard every day."

"I don't like the first design; It looks boring and too easy to make"

- What would you suggest that would improve the design and WHY?

"I suggest removing the doors from the design because I think it's going to add another inconvenience in our morning routine."

"To add to the drainage idea, a small fan inside would be good to help aerate the shoes and help them dry quicker, ready for the next use. A container in the bottom would be good to catch the water."

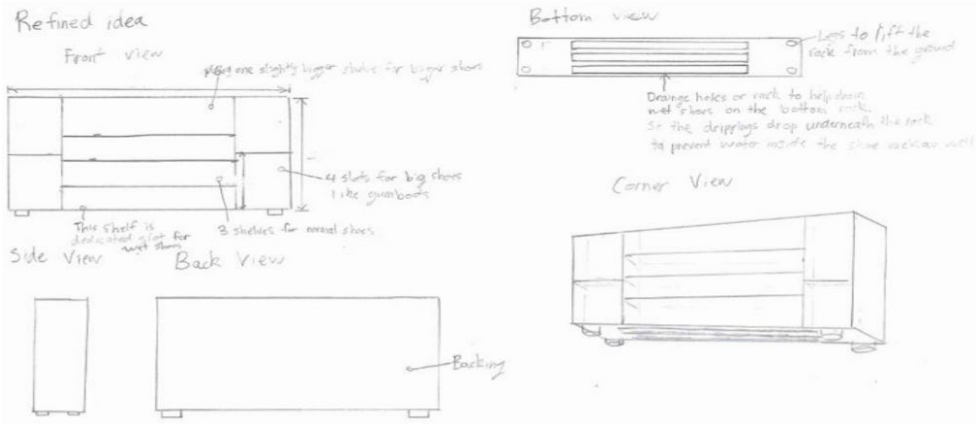
- Which one of the designs should I develop and WHY?

"I think you should a combination of one, two, and four. And grab the best things from those designs, like the drainage from four, and shelves from number two."

"You should keep working on the drainage idea, because it looks the most useful idea to work on and improve."

Stakeholder conclusion:

Both stakeholders told me that the like the drainage idea for wet shoes, I guess I should continue develop that idea further. But I think I also add my mum's advice to remove the doors from the design as well, because I agree with her statement that it would be a hassle that to open the rack everyday.



Stakeholder feedback for refined ideas

- What do you like about the idea and WHY?

"I still really like the amount of space for shoes. This will have enough room for everyone's shoes. And also the I love the addition of the side shelves for bigger shoes"

"I like how there is abundant of space for shoes, you could even use that space for non shoe items, I guess."

- What do you dislike about the Idea and WHY?

"I starting to think that there is too many shelves maybe add only two? Because it would be cramped, this is will make harder to put shoes in and dry shoes."

"Maybe the drainage slits could be replaced by holes, because it would look more aesthetically pleasing and be more structure stable."

- What would you suggest that would improve the design and WHY?

"I would add adjustable shelves by adding dells to have more choice later on what position the shoes would be on. This both create more function attributes and making the shelf replaceable"

"I suggest adding a roof, and make it slanted to prevent water build up on the top of the shelf. This will make the shelf have better weather resistant"

Stakeholder conclusion:

Their advice will be incorporated into the next design by having my mums idea on having adjustable shelves that you can easily move and replace, and her idea on having on less shoe shelf to make it easier to put in shoes. In addition ideas on having a roof to have more weather resistant and his idea to swap out the drainage silts to holes to be more strictly stable and stronger. Both stakeholders advice was very useful and informative, that is why I'm adding all their ideas.

Ideas Testing

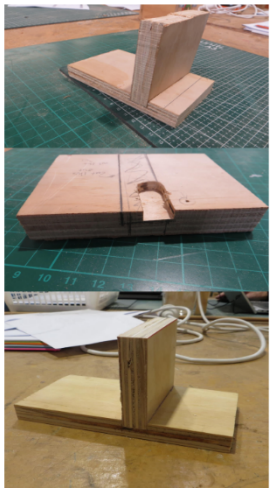
I have taken all my stakeholders advice and the refined idea plan to design a model of what the shelf would look like, the main things added was the feature of it having a shelf to increase weather resistance and checking out if the scale is correct and to my liking. Both stakeholders agreed this is a great start and no further comment was given.

Ideas testing

(a stakeholder) told me a good suggestion if the surface on the top rack is flat. When it rains the water stays on the top and damages the wood over time

He suggest adding a slope would get rid of the water faster, and limiting the amount of water on the top of ramp.
Another thing he suggested is adding a ledge to minimise the water creeping in from the bottom

STAKEHOLDER FEEDBACK



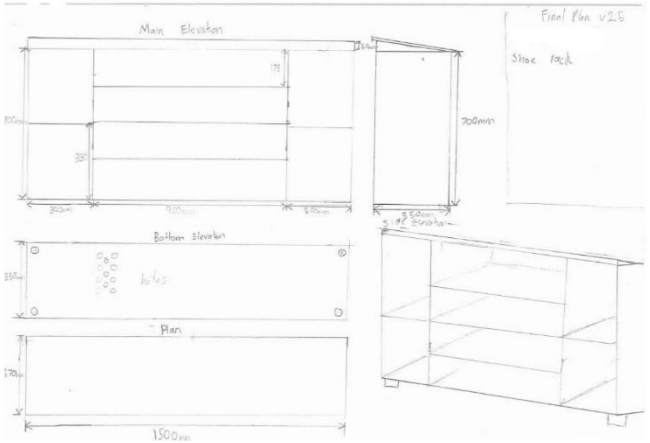
comment on joint testing:

"The dado joint looks like it will be good for shelves and seams very strong, I don't really dislike anything with this design. But maybe you should add nails on the outside throughout the cut out slot piece to add more strength to the joint."

My comment:

One of the aspects of my designs is join two pieces of wood in a 90 degree angles with having it to be structurally stable. I tested the dado joint as it would be perfect and better than a butt joint, i tested two methods; chizel, and router. The chizel method was slow, and the end result was not even causing the join not exactly being 90 degrees. The router method was seamless and faster while still having the joint to be exactly 90 degrees. Both stakeholders agreed that the router method was the best way to create the joint. But asked if i should add nails to the joint, I didn't go with his feedback because i wanted a seamless design on the exterior of my shelf.

Final Plan



Please note: that In the back of my blueprints was the specifications that I should I add a coat.

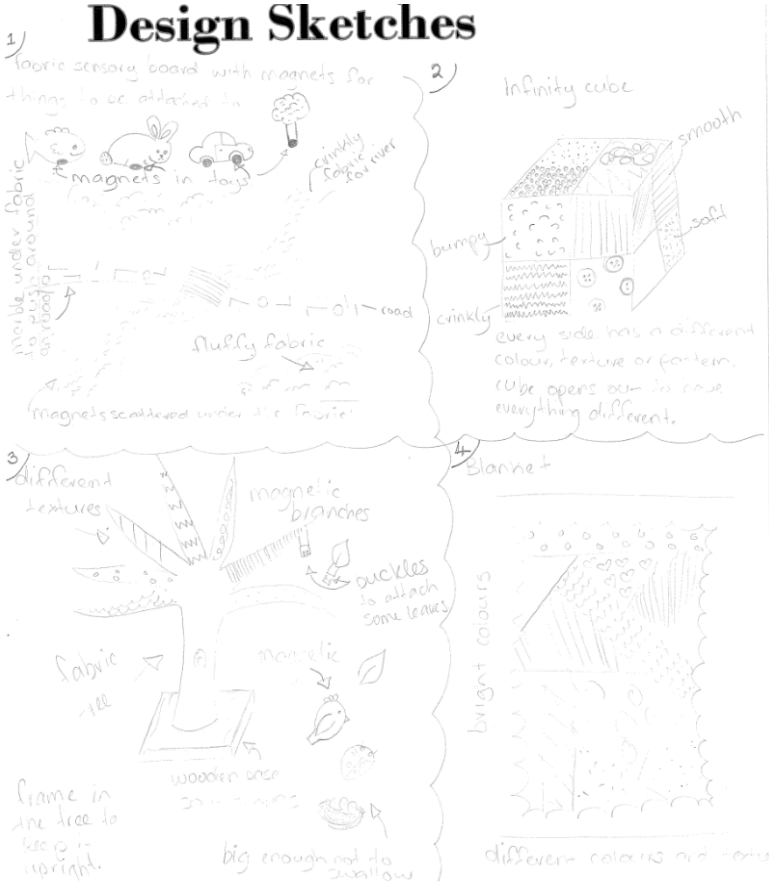
The design shows three adjustable shelves, but later on, both me and my stakeholders decide to make it only have two adjustable shelves.

EVALUATION

I think it partially met my design brief because it fits most of the requirements of it. This explored and incorporated stakeholder feedback by having my parents and my classmates share their ideas and thoughts during the creation of my shoe rack. For example, I chose a modified shelf design because both stakeholders thought it was a good idea and easier to make, and the idea of having a roof to prevent water leaking to shoes was from (a classmate). The shelf passed the requirement to fit more than six shoes, having more than expected and incorporating multiple types of shoes in constipation while designing and at the same time, having its structure integrity without being compromised. In it has an accessible and safe design by having curved corners to prevent injury and having coat to amplify its weather resistance. But I wouldn't say it fully met my design brief for two things, is that the shelf didn't have drainage holes like the design. It was a mistake on my end because I forgot about it during the manufacturing phase. In addition, most points were glued on, which prevents any repairs other than adjustable shelves, and legs that are easily replaceable.

I brought it to the environment that the shelf is going to be to test how much it fits the requirements. Its outside of my house so it would encounter a lot of weather, this means that weather resistant is strongly required. I tested how strong and stable it by adding weights, and the shelfs weather resistant is tested when i sprayed it with water, it was successful. All aspects were tested and was successful.

Design Sketches



Stakeholder Feedback

1. **Which design is your favourite and why?**

Stakeholder 1: Infinity cube
Stakeholder 2: I really like all 4 of your ideas, any one of them would be amazing, Infinity cube could be awesome.
Stakeholder 3: I love 1 and 3, 3 has the potential to look amazing if done well.
Stakeholder 4: I like all of your ideas. Product #3 is very cool, something different. I like the idea of being able to put items on and off the tree. Very interactive product, talking with students, asking them to put the bird on the tree or take the nest off the tree.

2. **What textures would be preferred by the students?**

Stakeholder 1: Any texture as long as it doesn't stick or rub roughly against my hands.
Stakeholder 2: texture wise anything that feels cool: fluffy, sequin, bumpy but also shiny, reflective, crinkly.
Stakeholder 4: Anything that would feel good on the hands, rough, smooth, fluffy, bumpy.

3. **What would you change about the product?**

Stakeholder 1: I like the concept of sensory, colours may be something you would consider.
Stakeholder 3: Magnets in the toys are a great idea.
Stakeholder 4: I think your concept is fantastic, making it bright and tactile,

4. **What size would be best for removable objects? (designs 1 and 3)**

Stakeholder 1: Easy to handle size, or though you could do large sizes and can be like a squish ball.
Stakeholder 2: No less than 7cms due to choking.

5. **Extra feedback**

Stakeholder 4: You would need to make sure the tree didn't fall over. How are you making the leaves, birds, etc?

I chose to do design 2 (the infinity cube). I did this because I got feedback for design 2 and 3 specifically but 3 would have taken too much time.

Materials and Component Testing

Stretch velvet, faux fur, sports mesh, stretch denim, cotton canvas, sherpa, corduroy and fleece performed the best when I tested a selection of fabrics durability. I will use these because they fit the brief as they are the most durable fabrics I tested. They have the widest range of textures, like my stakeholders wanted.
The purple glitter mesh, foil mesh and poplin didn't do as well in the test however I will still use them because I will double layer them with a more durable fabric. I am using the glitter and foil mesh because my stakeholders asked for some shiny and reflective fabrics.
I will not be using any muslin, very lightweight cotton or fine sports mesh as they do not fit the brief of being durable.
Satin did not do great when I tested it but it adds an important texture that I can't get with any other fabric. I tested two different satins and the second one was much stronger so I will only use that one to make the design more durable to fit the brief.
I rubbed a selection of fabrics in dirt then used a damp cloth to wipe it away:

Te Ao Mārama / Prototype
To analyse, choose, create

Prototyping

I made a prototype of my cube using calico fabric. I made a few mistakes like sewing some of the squares on upside down, these were easily fixed by just unpicking them. I will be more careful in my final design to make sure I don't make the same mistakes. It got confusing because there were too many squares all the same fabric, my final design should be less confusing because I will have lots of seperate fabrics. I cut notches into all my pattern pieces thinking it would make it easier to line up all my squares, this was not the case. Because they are such small pieces, it was easy to line up all the squares without using the notches. I will not cut notches in my final design to save time when they were more hastle than they were help.

Stakeholder Feedback

Attributes for Stimulating -Texture -Noise - Visual - Interactive	Comment:
Attributes for Calming -Texture (Smooth, relaxing) -Visuals (muted colours) -Sounds (relaxing, less abrasive) -Repetition	Comment: Good variation in textures with a range of different ones; any of them will work but a couple a little scratchy so may not be calming No noise associated so this is good for calming Colourful fabrics chosen so any will work - perhaps warmer colours will give more of a calming effect I like the interactive nature of this product as the ability to keep playing with it with no end point (repetitive) would suit the client well; and it keeps changing colour which keeps the interest of the user
Mostly Sewn	yes
Size	good size; can be easily manipulated
Cleanable	This could be problematic. Could it be 2 layered with the outside layer removable for washing? To have wipeable fabrics would take away the textures effect which would be a shame
Durable	Durable enough. Could double stitch seams to improve durability
Engagement	Excellent - see above
Safety	Looks pretty safe to me - just the washability aspect to think about
Senses	I think it is soothing and would just keep the client engaged with the repetitive nature of it - constantly changing colour and moving with a different feel with each turn.

Q1: Is there enough variation in textures? Are there any specific ones you don't like?

A1: Yes, I love the fabrics you have chosen.

Q2: Would you like warm or cool colours?

A2: Cool wouldn't be as calming.

Q3. Is the size of the cube good?

A3: Yes its good, not too cumbersome to handle.

Extra feedback:

Awesome idea to have double layered fabrics,

Perhaps link flower squares together, corduroy squares together.

My stakeholder feedback suggested making a cleanable cover for it. However, due to the complexity of the design and the time I had to create it, I couldn't make a cleanable cover for it. To fix this issue I have tested many fabrics and selected the best ones that can be wiped clean with a damp cloth.

Another thing my stakeholders mentioned was maybe double ~~stitch~~ stitching it for durability. I have chosen not to do this as it would have taken too much time. I made sure to only use fabrics that were durable and didn't wear quickly.

I didn't focus on linking certain types of fabric as most fabrics will end up next to each other as you unfold the cube, also having all the corduroy, for example, would make the design feel uneven.

Evaluation

Initial Brief and Specifications

The School have asked you to create an outcome to keep the students engaged in their sensory room. The outcome you are to create and construct needs to either calm or stimulate a students senses.

- *Use fabric with correct performance properties for the nominated end use.*
- *Mostly constructed with a sewing machine and have a high standard of finish.*
- *Easily Cleaned*
- *Durable*
- *Fit for purpose*




Final Stakeholder Comments
"Holy moly that's amazing!"
"Speechless"
"It's cool to be able to feel all the textures, really cool to be able to fold it out."
"I didn't realise at first you could fold it out but its so cool to have new textures each time you unfold it"
"I have one at home but its all the same texture, this one is cooler and better because its all different textures"

Is your outcome:	Yes/ No	Comments
Calming or Stimulating	calming	
Engaging	yes	Repetitive and keeps the students attention to feel and see the different sides.
Have you met your specifications?	**Yes/ No**	**Comments**
Use fabric with correct performance properties for the nominated end use	yes	All soft fabrics, all different textures, colours, and patterns.
Mostly constructed with a sewing machine and have a high standard of finish	yes	
Easily Cleaned	yes	I tested a lot of my fabrics and I used the ones that were easily wiped clean with a damp cloth.
Durable	yes	All my fabrics were durability tested and I made sure not to use the nes that did badly.
Fit for purpose	yes	It calms students' senses and engages them with its calming repetitiveness but also engages their visual and touch senses.

How have you created a fit for purpose outcome that meets the requirements of the end user?

By using 48 different fabrics of multiple textures and colours, I have created an infinity cube that calms students' senses by repetition and smooth and soft fabrics. It is cleanable and durable and mostly constructed with a sewing machine.

How did you use stakeholder feedback in the development of the outcome?

Since the start of my project I have been taking onboard my stakeholders feedback and adjusting things where needed and suitable. For my first lot of feedback I listened to what design they would prefer, and took onboard their comments about size and specific fabric textures.

For my later lots of feedback I listened to my stakeholders when they said they would like warm colours as they are more calming. I listened to their concerns about cleanability and durability but I did not do what they suggested as I found other ways to make them durable and cleanable.

How did your testing and prototyping inform your decisions you made throughout the process whilst developing and creating your outcome.

When I tested my fabrics for durability, I made sure not to use the fabrics that performed badly and tore immediately, same with the fabrics I tested for cleanability. I didn't use some of the fabrics that I tested because it was quite hard to get dirt out of them just by wiping.

When I made my prototype, I made a few mistakes that I had to undo. When I was making my final, I did things in different order, as to avoid the issues I came across in my prototype.

STAKEHOLDER FEEDBACK	PERSONAL JUSTIFICATION

POSITIVE: Reflecting on my stakeholder feedback, I am happy to receive more positives than negatives on my first cooking trial. When researching pickled onions and how to present them, most photos showed these vibrant variations of pickled onions paired with cucumber, avocado, salmon etc. It definitely inspired me on how I would want to present my dish, so I'm very glad that I met expectations within the presentation. I feel that nearly everyone eats with their eyes first, so by choosing pickled onions which are a pink vibrant color I thought this would be the perfect product to make as it also fits all the specifications. Besides the presentation, both my stakeholders really enjoyed the taste of my product and how well the flavors balanced between acidity, sweetness and saltiness. When researching for different pickled onion recipes, there were many different vinegars too choose from, so I had to be sure with what flavors I was after. Ideally regular white vinegar is the most common to use in the brine process for the onions, but I felt that plain white vinegar would have too much of the acidic taste which is not what I was going for, as I wanted something that had balance in flavor too. So deciding on rice vinegar as my outcome for my brine, I was able to achieve a well balanced flavor of pickled onions.
NEGATIVE: The only negative feedback that I received on my first trial was the sizing of my pickled onions. I too would agree with this statement as I was quite confused on how to get the "perfect" cuts on my red onion. But also I am able to take the next steps by trialing different methods of how to cut

POSITIVES: My second trial of pickled onions was very different from my first trial. The outcome of my pickled onions within size and width exceeded my stakeholders and I's preferences. In this trial I had decided to experiment with the brine as the brine is the main component that determines the onions flavor profile. I had decided to do a balsamic vinegar brine after researching a variety of vinegars to use. The balsamic vinegar has a very strong flavor profile as well as smell. What also draws me towards choosing the vinegar was also the dark colour.	NEGATIVES: I'm going to be completely honest with the negatives of this trial but I myself, including my secondary stakeholder, aren't really pleased with the flavor of balsamic vinegar pickles. Like I said before this specific flavor is very based on your preferences if you like balsamic or not. I personally think the balsamic is so pungent and strong that it almost hides the taste of the onions which isn't what I want. Although you could use the brine as dressing for salad as that pungent taste would pair nice with something more balanced.	IMPROVEMENTS: I think improvements wise I will have to personally learn how to use a mandoline as the cuts were actually not the same width. This image is an example of how some rings were regular and some were cut half off. 
STAKEHOLDER FEEDBACK: 	SECONDARY STAKEHOLDER: 	OVERALL DECISIONS + NEXT STEP: My final decision is to probably not continue with making pickled balsamic brine as I feel that balsamic is too high in taste of acidity and it definitely is more on your preferences if you like balsamic. My next step is to continue with the rice wine vinegar pickled onions and I will trial it further with adding cucumbers to the brine.

CUTTING	When your knife strikes the surface of the ingredient, there is a split second during which the food beneath the blade is compressed into a V-shaped valley.	Secondary stakeholder: "I did not find the width of the onions easy to eat, as it was too thick and this would definitely need to be fermented longer in order for the onion to fully soak in the brine."	This was my second time cutting my onions with a knife, and I would say myself as a beginner it's really hard to achieve those uniform cut slices where they are all thinly sliced and even, so I think a mandoline would be better.	
SLICING	Slicing is a general term that means to cut across the grain into thin, uniform pieces. Almost every fruit or vegetable can be sliced, as well as other ingredients.	Both stakeholders: "We both prefer this thinly cut onion over thick as the onions are able to soak in the brine more easily and we both feel that flavors taste better when thinly sliced."	The mandoline was my favorite equipment to use as the onions came out perfectly thin which achieved the standards and preferences of both my stakeholders.	

Main stakeholder: "The rice wine vinegar pickled onions with cucumber offer a refreshing, crisp, and subtly tangy bite. The onions have softened just enough to lose their raw sharpness, yet still hold a light crunch that complements the cucumber's clean, watery snap. The rice wine vinegar adds a gentle acidity that's less intense than traditional vinegar, bringing out the natural sweetness in both vegetables. The flavors meld beautifully, creating a delicate balance between the mildly pungent onion and the cool, refreshing cucumber. This pairing would be an excellent accompaniment to rich dishes, as it provides a light, palate-cleansing contrast without overpowering."

Secondary stakeholder: "These rice wine vinegar pickled onions with cucumber are super refreshing and add just the right zing. The onions still have a little crunch but aren't as sharp as raw—they're tangy and slightly sweet, while the cucumber stays nice and crisp. The rice wine vinegar brings a mellow acidity, not as harsh as regular vinegar, so it all tastes really light and balanced. Together, they're the perfect cool, crunchy bite to break up richer flavors and keep things interesting without taking over."

In summary, the feedback I have received from my stakeholders identifies that the rice wine vinegar pickled onions with cucumber have a refreshing and well-balanced flavor. The pickling process softens the onions just enough to tone down their raw sharpness while still keeping a satisfying crunch. The rice wine vinegar's mild acidity enhances the natural sweetness of the onions and cucumber, creating a light, balanced taste that does not overpower the vegetables which was a goal that I really wanted to achieve. Overall, the pickling process produces a dish that highlights the natural flavors of the onions and cucumber in a flavorful, balanced way.

The process of testing and trialling my pickled onion recipe was a really enjoyable experience. Having the opportunity to develop a product that my stakeholders and I enjoy eating allowed me to learn a lot from feedback, to taste, texture etc. Stakeholder feedback was crucial in refining the recipe to better suit a range of preferences and ensure its marketability. By listening to their input on flavour balance and texture, I was able to make adjustments that ultimately enhanced the product's appeal. This collaborative approach not only improved the final outcome but also strengthened my relationship with those invested in the project. Collaborating with stakeholders provided invaluable insights that I might not have considered on my own. Their diverse perspectives enriched the development process and highlighted the importance of incorporating varied viewpoints in product creation. Within the three trials that I have tested of my pickled onions, I had finally decided on my base flavour to be rice wine vinegar and to add a new addition... that being cucumbers. I implemented the changes and the results were amazing. The cucumbers added a unique twist to the flavour, and the quality of the product was even better. I was extremely pleased with the outcome of the collaboration.