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Level 1 Materials and Processing Technology RAS 2023

**92015 Demonstrate understanding of materials and
techniques for a feasible Materials and Processing
Technology outcome**

EXEMPLAR

Merit

TOTAL 06

To be completed by candidate:

NSN

School Code



Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Level 1 Materials and Processing Technology RAS 2023

92015 Demonstrate understanding of materials and techniques for a feasible Materials and Processing Technology outcome

Credits: Four

PILOT ASSESSMENT

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of materials and techniques selected for a feasible Materials and Processing Technology outcome.	Explain materials and techniques selected for a feasible Materials and Processing Technology outcome.	Evaluate materials and techniques selected for a feasible Materials and Processing Technology outcome.

Enter your 9-digit National Student Number (NSN) and School Code into the space at the top of slide 1. (If your NSN has 10 digits, omit the leading zero.)

Answer ALL parts of the assessment task in this document.

Your answers should be presented in Verdana font within the text boxes. You may include only information you produce during this assessment session. Internet access is not permitted.

Save your finished work using the following naming convention: **SchoolCode-YourNSN-92015.pptx**.
If you submit your report orally, embed the single file into this document.

If you open this document using software other than PowerPoint:

- save your slideshow as a PDF, using **SchoolCode-YourNSN-92015.pdf**
- if submitting oral responses with a PDF report, submit a separate file for the audio, using **SchoolCode-YourNSN-92015.mp3 or wma**

By saving your work at the end of the assessment session, you are declaring that this work is your own. NZQA may sample your work to ensure this is the case.

INSTRUCTIONS

Respond to the following task about how you **selected, tested, and trialled materials and techniques** for the design of a feasible outcome.

You may support your answers with images, which can be inserted into the report where image boxes have been provided.
Do not use video files.

You should aim to write no more than **800 words** in total. Where audio evidence is used, the total duration should not exceed **4 minutes**.

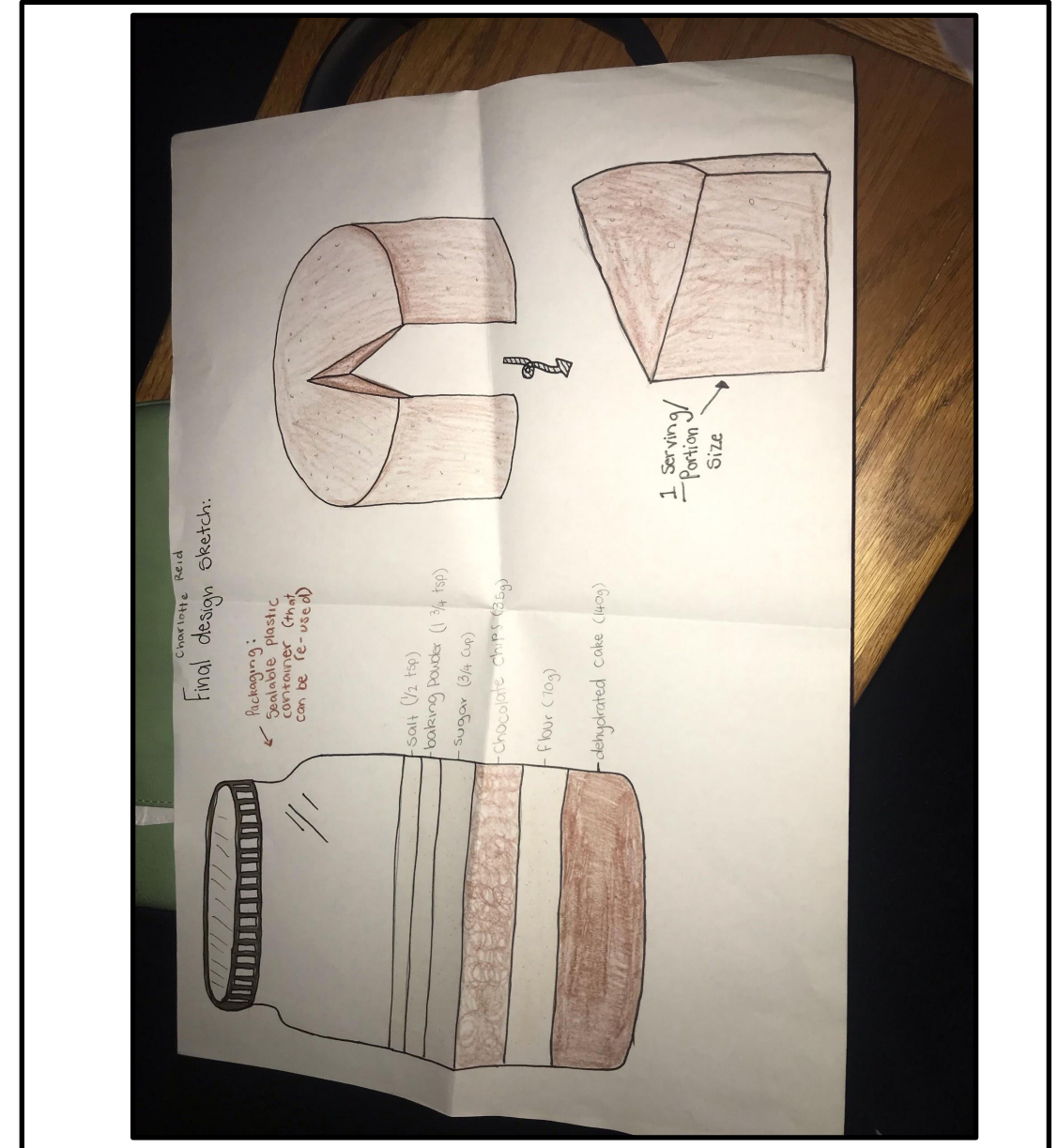
(a) Your design – what it is

(i) Who is your design for (i.e. person, whānau, or community)?

My design is for someone who is interested in buying a product that's purpose is to reduce waste from landfills. My product is a cake mix, using dehydrated cake offcuts that would usually get thrown away and the mix can be easily made in under an hour and is suitable for any occasion.

(ii) In what environment is the design intended to be used?

The environment my design is intended to be used in is a kitchen because my product needs to be mixed with wet ingredients and then baked in order to become a cake. Directed towards families, couples, ect, that are looking for a quick, easy and delicious cake mix.



(iii) Describe in detail the physical attributes of your feasible outcome.

- Must be in layers in the container
- The dehydrated cake must be in a crumb, almost like breadcrumbs- this is to ensure
- Final outcome must look appealing and not sink in the middle.
- Must have a moist rich texture
- Must include dehydrated cake

Image 1



Image 2



Images (optional)

(iv) Describe in detail the functional attributes of your feasible outcome.

- Must be fast and efficient to make- not take hours and be easy to be made by all ages
- Must not make too many ingredients, so there is not much waste
- Must be suitable for sharing
- Must be suitable for a birthday or celebration
- The cake should stay together when picked up, and not crumble too much, or fall apart.



Image 3



Image 4

- (b) Based on the physical and functional attributes of your feasible outcome, identify **one or more** tests you undertook on **at least one** possible material / component.

Material / component	Tests
Type name of material / component	Type name of test
Cake	<p>Crumble test, to make sure it has been thoroughly dehydrated.</p> <p>The first experiment that I did, I crumbled the cake into small bits and once it was dehydrated, I food processed it to make it into a fine consistency like flour but it wasn't that fine, but the second time I dehydrated the cake, I crumbled it into bigger chunks and when I Processed it in the food processor, it was finer than before!</p>
Dehydrating cake	<p>I weighed the cake, then dehydrated it overnight, then when it was done, I weighed it again, to find out that it had almost halved in the weight. I found out that when it gets dehydrated, it loses all its moisture, meaning that it is lighter than it was before it was dehydrated.</p>
Texture	<p>To test if the texture of my cake was right, first I did a visual test, checking to see if my cake was cooked properly and not raw in the middle, then once I had let it cool and decorated it, and cut it and tasted it. The texture was good, the chocolate chip base was a bit chewy but the dense, moistness of the cake balanced it out.</p>

- (c) Provide evidence of at least one test you carried out on your selected materials / components for use in your feasible outcome. You may show evidence from up to four tests.



Results

To do the crumble test, to see if my cake had been fully dehydrated, I rubbed it between my fingers to see if it would crumble easily- and if it did, I would know that it needed more time in the dehydrator as it wouldn't be firm enough, and would cause the other dry ingredients to become soggy.



Results

I weighed the cake before I dehydrated it and after I dehydrated it. I discovered that because when the cake is placed in a dehydrator, it loses its moisture which also means it loses roughly half its weight so I began needing to double the amount of cake I needed before it got dehydrated, so that I could get the right amount.



Results

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

Image of test

Results

Start typing here

(d) Based on the physical and functional attributes of your feasible outcome, identify **one or more** techniques you trialled with **at least one** possible material / component.

Material / component	Techniques
Type name of material / component	Type name of technique
Cake	Dehydrating- I'm dehydrating the cake for 14 hours in roughly 2 cm chunks, then once dehydrated, I weigh the amount that I need, then place in a food processor to ensure the cake has a texture like flour.
Cake	Weighing- For the first trial, I wanted 140g of dehydrated cake. I didn't realise that when you dehydrate, the material, it becomes lighter than it was before, meaning that I didn't end up having as much cake as I needed.
Mix	Layering- I layered my ingredients in the jar, so that it not only looks appealing, but you are able to see all the ingredients, and know that there are no preservatives or anything

- (e) Provide evidence of at least one test of a technique you carried out to select the most relevant one for your feasible outcome. You may show evidence from up to four tests.



Results

I dehydrated my cake overnight for 14 hours to ensure it was fully dehydrated, then once it was weighed so I had the right amount that I needed, I put it into a food processor so that it could go from chunks of cake, to a dusty sand like texture



Results

I discovered (because I had never used a dehydrator before then) that the cake loses all of its moisture and becomes a solid cookie-like texture. I also found out that I need to be doubling the amount of dehydrated cake, that I put in there because it loses so much weight, I end up having not enough cake and needing more.



Results

I decided to layer my ingredients in the container, because- not only did I want my product to look appealing and attractive, but I wanted the buyer of my product to know what ingredients are in it, just from looking at it, and no that there are no preservatives.

Image of technique trialled

Results

Start typing here

(f) Impact of testing and stakeholder feedback

- (i) What influence did your selection and testing of different materials / components and trialling of techniques have on the feasibility of your outcome and its physical and functional attributes?

Add images that support your response into the next slide as needed.

When we first learned about upcycling, and the waste that New World was throwing away, we did a series of trials in class to work out which product would be best to use and which techniques would be best. In the end, I chose to work with dehydrated cake because I liked the outcome of that the most and thought it would be the most interesting to use. We tried pureeing, freezing, and dehydrating, all which had unique outcomes.

The purpose of doing this is to upcycle a product that would usually get thrown into a landfill, so I am making a cake mix, using dehydrated cake. I made this decision because I have tried to make this product several times, and have gotten feedback from my stakeholders (Mrs [REDACTED], Mrs [REDACTED]) and found things out myself- such as how much dehydrated cake and flour I need to make my cake into a solid. When I develop this design idea I need to consider packaging- weather or not I can find a good sized jar. Working out how much of each ingredient I need.

- (ii) What influence did stakeholder feedback have on your feasible outcome, including the selection of materials / components and techniques?

Add images that support your response into the next slide as needed.

In my first trial, I was hoping to create a cake mix using no flour at all and substituting it for dehydrated cake. After I sent it off to my stakeholder (Mrs [REDACTED]), to make, the results of how it turned out were not good. Because there was zero flour in the cake mix, it didn't become a solid in the oven. It just stayed a liquid. That was when I discovered that I must be adding flour into my cake mix. Along with that I also decided that I wanted add chocolate chips to the mix, as my stakeholder said that it could be a good idea, and could add more flavour. Overall, my stakeholders have helped me to come up with the best ratios and ingredients for my product, and on my last trial, my cake turned out exactly how I has hoped it to be.

You may include clearly labelled images to support your response to part (f).



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



Here is a picture of the layering in the container

Image

Image

Image

Image

Merit

Subject: Materials and Processing Technology

Standard: 92015

Total score: 06

Q	Grade score	Marker commentary
(a)–(e)	M6	Attributes are clearly listed, however, there is a lack of detailed description. Tests are well defined; results are explained and evaluated.
(f)(i)		The candidate explains their reasons for choosing materials and techniques but does not link back to attributes nor consider stakeholder feedback.
(f)(ii)		The candidate has consulted the stakeholder but has not reflected on how this feedback was used to improve the feasibility of the outcome. The candidate has made general comments on the process rather than evaluating how the selection has been used to improve the outcome.