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92015



Mana Tohu Mātauranga o Aotearoa  
New Zealand Qualifications Authority

## Level 1 Materials and Processing Technology 2024

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

Credits: Four

## ASSESSMENT TASK

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

Refer to this document to respond to the task for Materials and Processing Technology 92015.

Check that this document includes page 2.

Do not use chatbots, generative AI, or other tools that can automatically generate content.

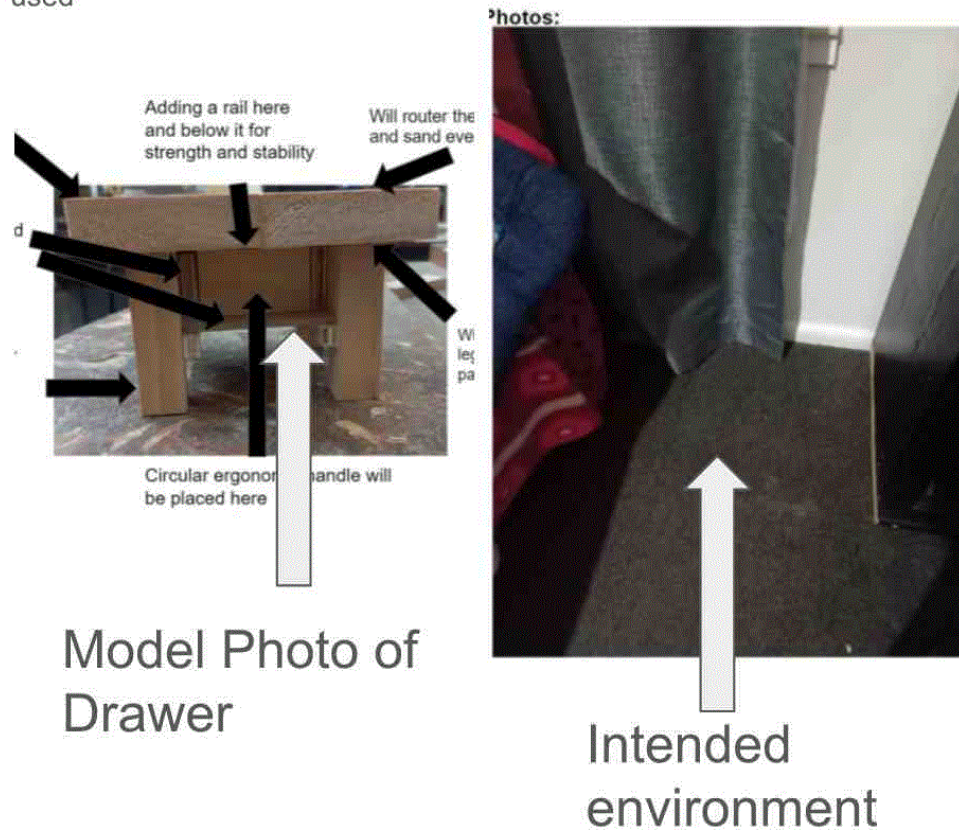
**DO NOT TAKE THESE ASSESSMENT MATERIALS OUT OF THE ASSESSMENT ROOM.**

**Excellence**

**TOTAL 08**

(a) Provide an image or images of your feasible outcome and briefly describe its **specifications**, including **physical** and **functional** attributes, the **end user(s)**, and your product's **intended environment**.

Provide an image of the intended environment - where the project will be used



Describe the **end user(s)**, **stakeholders**, and your products **intended environment**:

I am constructing a bedside drawer because I currently don't have one to hold necessities. The photo taken of the environment is in my bedroom and is where the drawer will be placed. It is going in my room because I currently use a chair as a drawer and has caused me many problems such as things falling off consistently and there is no drawer that opens to store things. I asked my brother about this project because he sleeps in the same room as me and he agrees with the placement I have chosen and the reason for it as well. What I will need for my bedside drawer is to be slightly large in size in order to hold my important items in an organised manner. This space I have chosen also has some limited space because it is the only place I can put my drawer so I have to accurately measure this area so the result of the product isn't too big to fit or too small. I then talked to my other stakeholders (My parents) about this idea and they have also stated that the area I have chosen is a good idea, but they intended me to be careful of the surroundings due to the space I have. I agree with their decision and I will have to keep their advice in mind when making crucial decisions.



(a) Provide an image or images of your feasible outcome and briefly describe its **specifications**, including **physical** and **functional** attributes, the **end user(s)**, and your product's **intended environment**.

Provide an image or images of your feasible outcome - drawings, models, and/or finished product.

Will sand the edges at the end for no sharp edges

Joints used is dowel

Strong legs



Pinewood and matai to contrast and appeal

Opening for drawer

Briefly Describe the **specifications**:

When I was building my project, I had to come up with crucial specifications on what this drawer needs to have in order for it to actually be useful. So I planned this brief specification out and it consisted of 9 major attributes. I haven't finished making my project but the specifications should still be the same.

1. First is that the joints needs to be strong because it will be holding many items.
2. Sanding the edges so nothing is sharp and no one will get hurt
3. Drawer itself needs to be strong so it can hold the important necessities
4. Using glue such as epoxy or pva glue so the joints can have a strong connection
5. The legs need to be strong so it is stable and doesn't break easily
6. Using the equipment the teacher can only use for precise measurements such as the drop saw
7. Will also be using linseed oil at the end to protect the wood and making it more appealing
8. The handle needs to be easy to grab and ergonomic.
9. Will be using woods pieces such as pinewood, matai and possibly MDF for the contrast look.

My stakeholders had a look through this specifications and they have stated that they like the variety of materials used and the process of this looks very reassuring.

(a) Provide an image or images of your feasible outcome and briefly describe its **specifications**, including **physical** and **functional** attributes, the **end user(s)**, and your product's **intended environment**.

Describe the **physical** attributes:

- Legs need to be connected to the rails  $\frac{1}{3}$  high up the leg because my stakeholder stated that it needs to be high enough for me to reach easily.
- The table top part of my drawer will be looked at and will be smooth and flush
- The size needs to be accurate because if it was too big, it wouldn't fit and if it was too small, it possibly wouldn't be able to fit my items.
- When looking at the handle, it is a knob and not a cut out edge on some modern drawers today
- Looking at the colour and it pops out the grain and protects it.

Describe the **functional** attributes:

- Using joints such as dowels or biscuits for the strength, durability and long lasting advantage of it. These attributes would be perfect for my drawer.
- Using sanding attributes such as the drum sander or palm sander to create this smooth, flush look for my table top drawer piece.
- Measuring my environment so when making my project, I will be confident that the product will fit inside my space.
- The handle will possibly be screwed to the back or glued on. But preferably screwed so it lasts longer.



## b) Functional Attribute 1:

Choose TWO of the functional attributes of your feasible outcome. For each functional attribute:

- describe the functional attribute you have chosen
- describe at least two techniques trialled for the functional attribute
- explain how you decided which of these techniques would be most suitable for the feasible outcome.

### Describe Functional Attribute 1:

The first functional attribute is strong joints when connecting the legs and side pieces together. I need strong joints in my project because I need my drawer to be long lasting as it will be in my room for many years and it will be holding many essentials so trialling these techniques will not only help for the present moment, but for future causes as well. It will also create a seamless look since it is hidden inside the wood.

### Stakeholder feedback on the Attribute, testing and selection:

My parents gave me some feedback on these two techniques and have taken a look at the pros and cons of each joint. What they prefer is the dowel joint due to the robust connection and the versatility of it. They chose this joint because we have a baby cousin who jumps around a lot and we don't want the drawer breaking this easily, so the dowels would be the best option.

### Decision and Justification of the chosen Technique:

I have trialled these two techniques and I have decided to choose the dowels. This is because the pros the dowels have outshines the cons of each technique which means it really is considered one of the best joints in the workshop. My parents feedback of the baby cousin situation really perceived my view on these dowel joints and made it a go to joint for me. The dowels are also slightly slower in the process when making it but the process is very reassuring and you know it is going to be strong

### Technique 1:

The first technique I have trialled was the usage of dowels. The pros of this technique is that it provides a robust connection with the two pieces, it is versatile because I can place joints in the middle of the wood if needed and is considered one of the most strongest joints in the workshop. Cons of it is that it requires precise drilling and alignment for the pieces to be aligned properly.

### Technique 2:

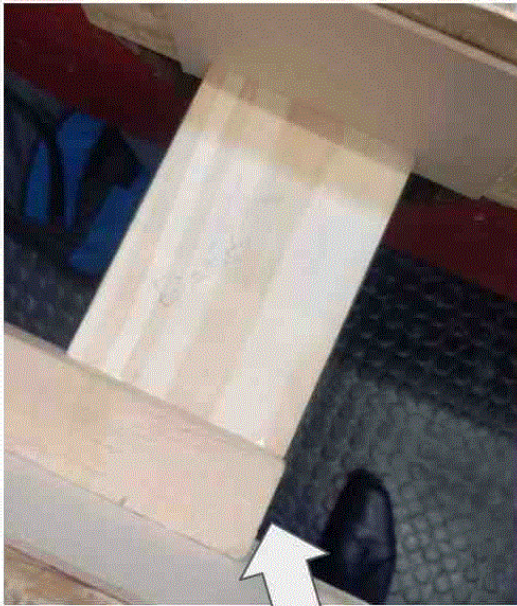
The second technique I have trialled was the usage of biscuits. Pros of this is that it is perfect for alignment because it has a platform to pre drill the joint and is a slight faster process than dowels. Cons of this technique is that the joint heavily relies on glue to do the work because of the short biscuit.

### b) Functional Attribute 1:

Choose TWO of the functional attributes of your feasible outcome. For each functional attribute:

- describe the functional attribute you have chosen
- describe at least two techniques trialled for the functional attribute
- explain how you decided which of these techniques would be most suitable for the feasible outcome.

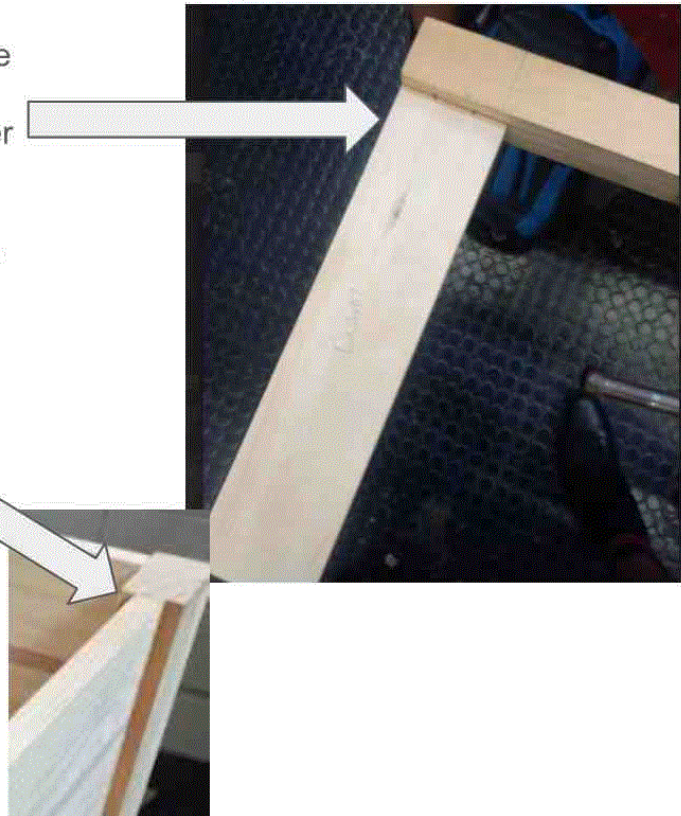
Photo Evidence of trialing techniques for **Attribute 1**: (Show stakeholder comments as well)



Biscuit Joint  
Easy to align and make it flush with other wood which makes it another good joint

Dowel joint (Chosen joint due to the parents feedback of the affects the baby cousin will have on the drawer and the strength it provides) It is also in the middle because if I tried making it flush, the uneven surface would be noticeable. I used this in my real project as well

When configuring both of these physical tests, I talked with Mr [REDACTED] of the aspects these have. What he stated was the biscuit was better for alignment but if accurate with the dowels, I could also do the same with a much stronger joint. Overall we both selected the dowels as it is overall more durable and stronger than the biscuit joint.





## b) Functional Attribute 2:

Choose TWO of the functional attributes of your feasible outcome. For each functional attribute:

- describe the functional attribute you have chosen
- describe at least two techniques trialled for the functional attribute
- explain how you decided which of these techniques would be most suitable for the feasible outcome.

### Describe Functional Attribute 2:

The second functional attribute is finishing my table top to a smooth enough finish so that I can sand it to a quality finish prior to oiling. When glueing my matai and pine together, they ended up not being flush, so I needed to find a technique to make the flush before sanding my table top. I need to finish my table top because I need to make sure oiling and sanding it would be easy, getting rid of the rough surfaces would help make it nice and people will touch it so I don't want them getting splinters.

### Stakeholder feedback on the Attribute, testing and selection:

Mr [REDACTED] (Teacher) gave me some feedback on these two techniques and he stated that the drum sander is time consuming but will be able to sand my wood piece of switching sides but will cause grooves, making sanding afterwards hard. However, the thicknesser is time efficient and quick but it doesn't fit with the grain. Going against the grain will cause chips on the edges but isn't a big deal because I will have a rail around it.

### Decision and Justification of the chosen Technique:

After trialling both techniques and getting feedback the teacher, I have come to the conclusion that the thicknesser would be best for my project. I say this because the thicknesser is a great option for sanding big surfaces which the drum sander can do but in a slow way. The thicknesser is also great at constantly getting the same even surface which contributes to the looks of it while being beneficial to us. Although the thicknesser may chip my edges, I have been compromised that a rail will go around it making it noticeable.

### Technique 1:

The first technique I trialled was the drum sander. The pros of this technique is that it allows moderate sized pieces to go through. Cons of this is that it requires a dedicated space in the workshop due to it being bulky and heavy and also is time consuming. Also will cause grooves which makes sanding difficult after.

### Technique 2:

The second technique I have trialled was thicknesser. The pros of this machine is that it allows bigger wood pieces to be sanded down consistently and is time efficient whilst having an even surface throughout each piece. Also gets rid of imperfections easily. Cons of it is that it also is big and requires a space in our workshop.

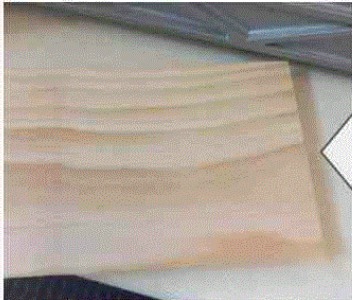


## b) Functional Attribute 2:

Choose TWO of the functional attributes of your feasible outcome. For each functional attribute:

- describe the functional attribute you have chosen
- describe at least two techniques trialled for the functional attribute
- explain how you decided which of these techniques would be most suitable for the feasible outcome.

Photo Evidence of trialing techniques for **Attribute 2**: (Show stakeholder comments as well)



The drum sander against the grain and causes grooves which is hard to sand afterwards.

Thicknesser is great for big pieces shown here. My table top piece shown below will be used in the thicknesser since I need to make the matai even with the pinewood.

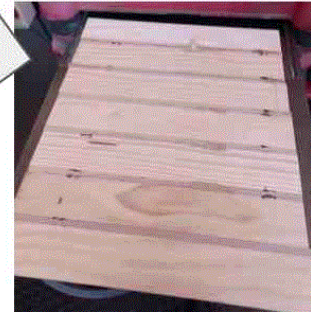


Table top has to fit against the grain but I have been compromised from the rails. I tried these two because the Matai was sticking out a little bit so I needed to declare which would be the best for my project without harming it

Drum sander is good for moderate sized as you can see in this picture, but my wood piece won't fit. However, my wood piece can fit through here by switching sides but is time consuming and will cause grooves inside the wood which makes sanding afterwards harder

I have also talked with my parents when configuring the tests on which is the best technique and they went for the thicknesser as well. This is because it is much more time efficient than the drum sander and little chip isn't much of a big deal since it will be hidden by the rail.



Tested going against the grain and the result was the edges getting chipped. Will be solved by the rail around it



(c) How did you use at least two stakeholders' feedback when choosing techniques related to your feasible outcome?

Stakeholder 1:

My parents were the stakeholder and their feedback helped me to make my decisions especially for the first functional attribute. This is because they stated we have a baby cousin that visits regularly and he jumps around a lot, so not having strong joints in my project will be bad for my drawer as my specification of having making sure it lasts long diminishes. They also helped me when making my actual product, I needed to be aware of my surroundings because I have limited space, so having a too big drawer would mean I wasted my time making my whole project, so this feedback was crucial.

Stakeholder 2:

My [REDACTED] really helped me when making the decision between the trials of thicknesser and drum sander. Both of them had their advantages and disadvantages but the thicknesser came out on top and his feedback guided me on which to choose. He stated that the drum sander was good at sanding big objects because you can switch sides, but it will cause grooves which will make it much harder afterwards. However, the thicknesser is much more time efficient than the drum sander, but my lid piece wouldn't go with the grain so I have to put it through against it, causing chips on the edges. He said that the chips wouldn't matter because there would be a rail around the lid so it will not be visible. The feedback Mr [REDACTED] gave me really helped me with this hard decision because both of these techniques are really good in its own ways.

## Excellence

**Subject:** Materials and Processing Technology

**Standard:** 92015

**Total score:** 08

| Grade score | Marker commentary  |
|-------------|--|
| E8          | The candidate evaluated the results from techniques trialled. The candidate evaluated the selection of the techniques from trialling. The candidate has detailed two functional attributes of their outcome and four techniques trialled during its design. The candidate has reflected on feedback from two stakeholders (end user and expert) to improve the feasibility of the outcome. |