

**This is a resource for AS92012. It is a generic template that should be edited to best fit your students. It is designed to make sure your students have meet all the criteria. Parts of this template are not assessed but are essential learning.**



NEW ZEALAND GRAPHICS AND  
TECHNOLOGY TEACHERS ASSOCIATION  
NGA POUAKO TOI O AOTEAROA

# OVERVIEW

- This year you are going to be challenged in your design thinking and skills.
- This will be a course where you will learn about design construction and sustainability.
- You are going to design and make a coffee table with specifications in a design brief.
- You will develop a range of skills that may build on your prior knowledge or set you up to work confidently if you are new to the workshop.
- You will design, make and take home a quality outcome that you are proud of.



This is an example of a unit that leads to the assessment for AS92012. This is not the only way to deliver the unit; as a teacher, you can adapt the unit to your environment, context, teaching and students.

# STANDARD

Develop a Materials and Processing Technology outcome in an authentic context.

Level 1

Credits 6

Assessment Internal

<https://ncea.education.govt.nz/technology/materials-and-processing-technology/1/1?view=standard>

## ACHIEVED

Develop a Materials and Processing Technology outcome in an authentic context involves:

- creating a fit-for-purpose outcome for a person, whānau, or community using a brief with specifications.
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## MERIT

Refine a Materials and Processing Technology outcome in an authentic context involves:

- applying stakeholder feedback to inform the development of the outcome for a person, whānau, or community
  - explaining decisions that inform the improvement of the outcome's fitness for purpose.
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## EXCELLENCE

Evaluate a Materials and Processing Technology outcome in an authentic context involves:

- analysing how stakeholder feedback informed the development of the outcome for a person, whānau, or community
  - evaluating the outcome against the brief with specifications for fitness for purpose in the actual or modelled intended environment.
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- 2 A *brief* is a statement of intent that identifies the purpose, end user, and actual or modelled intended environment in the authentic context when developing an outcome, considering fitness for purpose. Students can use the brief provided by the teacher and further develop it or generate their own.

*Specifications* are short statements of intent that are precise and measurable. They must include the physical and functional requirements of the outcome. Specifications are evaluated and explained as either met or not met.

In Materials and Processing Technology, an outcome demonstrating *fitness for purpose* is one that addresses the requirements of a brief with specifications, and considers the end user(s) and context.

- 3 For the purpose of this achievement standard, *stakeholder feedback* is used to inform the development of an outcome.

Stakeholder feedback is documented verbal or written information sourced first-hand. Sources of stakeholder feedback could include the end user, or people or groups that have expertise, experience, or a combination of both in this area. More than one stakeholder must be consulted.

- 4 In Materials and Processing Technology, an *authentic context* refers to a real-life situation within which an outcome can be developed. The situation or use of the outcome will be familiar to students.

- 5 *Decisions that inform the improvement of the outcome* do not have to result in successful improvements.

# SUMMARY

In this task, you will develop a Materials and Processing Technology outcome that addresses a storage problem for a person, whānau, or community. To determine the outcome's fitness for purpose you will evaluate it against a brief with specifications.

You will create a fit-for-purpose coffee table using a brief with specifications.

- A brief is a statement that explains who, what, where, when, why, and how storage will be demonstrated in the outcome.
- Specifications are short precise statements. You will evaluate the outcome against these statements by answering with a 'yes' or 'no' and explaining your answer. Specifications will include the physical and functional requirements of the outcome.

You will use technological practice to develop and create the coffee table. You will apply stakeholder feedback from more than one person at more than one stage of development.

- This stakeholder feedback will help you explain the decisions you made to improve the coffee table.
- This stakeholder feedback will help you explain the decisions you made to refine your coffee table, to improve its fitness for purpose.

# CHECKLIST

HIGHLIGHT WHEN YOU HAVE COMPLETED EACH TASK.

When you have finished creating your coffee table you will:

- analyse how the stakeholder feedback was used in the development of the coffee table.
- evaluate the coffee table against the brief and each specification in the environment it was intended for.
- use these evaluations to determine the coffee table's fitness for purpose.

**You will need to:**

- use a brief with specifications.
- apply stakeholder feedback to refine your outcome.
- develop and create your coffee table.
- present the coffee table's main features using annotated images or a video that you will then include in your portfolio.
- take your coffee table to the place it will be used, to see how it works. If you can't do that, model the intended environment as best you can.
- evaluate how stakeholder feedback was used to develop the coffee table.
- evaluate the coffee table against your brief with specifications to determine whether it is fit for purpose or partially fit for purpose.



# QUESTIONS TO ASK YOUR STAKEHOLDER

## Functional Needs

1. What primary purpose will the coffee table serve? (e.g., display, storage, entertaining, multi-use).
2. Do you need any additional functionality, such as built-in storage, extendable surfaces, or mobility?
3. How often do you use your coffee table, and for what activities (e.g., eating, working, holding drinks)?

## Aesthetic Preferences

4. What style or theme do you envision? (e.g., modern, minimalist, rustic, industrial).
5. Are there specific materials you prefer? (e.g., wood, glass, metal, sustainable).
6. Do you have a colour palette in mind?
7. Do you want the table to stand out as a statement piece or blend into the room?

## Context and Space

8. What is the size and layout of the room where the coffee table will be placed?
9. Are there any existing furniture pieces or design elements the table should complement?
10. How much space do you want around the coffee table for movement?
11. Do you need a specific shape to suit the room? (e.g., rectangular, round, oval).

## Practical Considerations

12. Do you have any children, pets, or specific safety concerns?
13. How important are durability and ease of maintenance for the materials used?
14. Are there any specific height requirements to match other furniture, like sofas?
15. Do you have a budget range for the project?



# LOCATION

PHOTO OF LOCATION

DESCRIBE THE LOCATION YOUR COFFEE TABLE WILL BE LOCATED:

SPEAKING TO YOUR STAKEHOLDER, WHAT FUNCTION DOES THE TABLE NEED TO ACHIEVE?

WHAT AESTHETIC ARE THEY WANTING?



# WHAT ARE:

## **Functional attributes**

Describe what a tangible outcome or its components can do or how it works. They are influenced by the performance properties of the materials used, and the needs of the end user(s).

## **Physical attributes**

Describe how a tangible outcome looks or feels and the material it is made from. They are influenced by the performance properties of the materials used, and the needs of the end user(s).

# BRIEF

# SPECIFICATIONS

It will be a functional coffee table no larger than 1000 x 600mm. / The coffee table must have at least three legs.

I am making a coffee table for my parents (stakeholders). My other stakeholder will be my teacher for more technical questions.

It is going to be located in the living room in between the couch and tv. The space between the couch and tv is 2.5 metres. We will use the coffee table for things like studying and eating dinner, and other dishes will end up on it.

My parents' special request is that the coffee table is sturdy and can hold a bit of weight (strong) both on top and in the rack (storage) underneath.

The coffee table needs to hold lots of things in our lounge (plates, cups, laptop, magazines etc)

The table will be used by my family and guests who come to my house. It needs to be safe, as my grandma and young kids come around often.

The table will be used a lot (durable) as we spend a lot of time in the lounge by the TV where the table is. Mum wants it to be easily cleaned, also around and under the table. (cleanable)

- Table size: 1000 x 500 x 520mm
- Rack height: 200 mm off the floor so mum can vacuum underneath. (cleanable) (storage)
- It will be varnished so that the top will be durable and easily cleaned. (durable)
- Tabletop will be 22mm thick with an apron underneath making it strong. (strong)
- All the edges will have a rounded edge making it safe for everyone. (safety)
- Legs will be solid timber 50x50mm making it sturdy.
- All the joints will be dominoed and glued making it strong. (sturdy)
- My stakeholder likes the idea of having more than one wood type incorporated into the table because it will match the things we have in our living room currently, as we have lots of dark wood and lighter wood furniture in our house. It will also help it stand out in the house. (aesthetic)

# BRIEF

You will make a functional coffee table for a stakeholder that is no larger than 1000 x 600 x 500mm.  
The coffee table must have at least three legs.

I am making a coffee table for.	
It is going to be located.....	
Their special requests are.....	
It needs to hold, display, store.....	
Who will be using the table?	
What will the primary use of the table be?	
The aesthetic is going to be....	



# RESEARCH

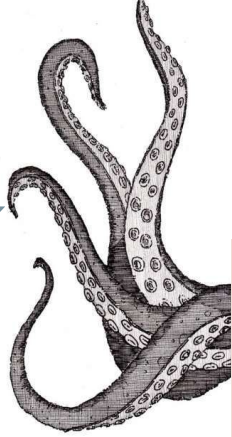
RESEARCH A RANGE OF DIFFERENT COFFEE TABLES, CONSIDERING YOUR STAKEHOLDER NEEDS

STAKEHOLDER FEEDBACK:

# MOOD BOARD

EXAMPLE

I am looking at organic shapes, octopus legs  
And oval or round table top.



CHESTNUT TIMBER



Japanese term for burnt timber is Shou Sugi Ban (焼杉板).  
This traditional Japanese technique involves charring the surface  
of wood to preserve it and enhance its aesthetic qualities.



I like the apron design on this table as it  
Gives the look that the table top is floating.



# MOOD BOARD



# CONCEPTS

FROM YOUR RESEARCH DRAW UP A RANGE OF IDEAS

FEEDBACK:

WHAT IS YOUR STAKEHOLDER'S FAVOURITE CONCEPT? WHY?

EVALUATE FEEDBACK:

WHAT ARE THE NEXT STEPS IN THE DEVELOPMENT OF YOUR COFFEE TABLE: .



# SCALE MODEL

Scale models play an important role in the design and development process. They help in: Visualisation: Providing a tangible form of a concept that can be inspected from all angles.

Draw your design in Illustrator, then use the laser cutter to cut out a scale model.

Assemble the coffee table and gain feedback from your stakeholders. Evaluate the design considering the feedback given on the next slide.



FEEDBACK: .

WHAT ARE YOUR STAKEHOLDERS THOUGHTS ON THE DESIGN: .

EVALUATE FEEDBACK: .

WHAT ARE THE NEXT STEPS IN THE DEVELOPMENT OF YOUR  
COFFEE TABLE: .

IMAGES OF SCALE MODEL  
DIFFERENT ANGLES

# SCALE MODEL

KEY ASPECTS TO DISCUSS: AESTHETIC, SCALE, PROPORTION

# CHESTNUT

YOU WILL BE PROVIDED WITH EUROPEAN CHESTNUT FOR YOUR PROJECT. THIS MATERIAL IS OPTIONAL, AND IF YOU WANT TO SOURCE OTHER MATERIAL, IT WILL BE AT YOUR COST.

EXAMPLE



Chestnut timber has a warm brown colour, coarse texture, and straight grain, making it ideal for furniture like tables or cabinets where appearance and durability are important.

It's lightweight, stable, and easy to work with, making it a good choice for both traditional and modern joinery techniques.

<https://bbstimbers.co.nz/nz-native-timbers/hardwood/>

Attribute	Description
Colour	Light to medium brown with a golden hue; darkens slightly with age. Sapwood is pale and distinct from heartwood.
Grain	Straight to slightly wavy grain with a coarse, open texture similar to oak.
Density / Weight	Medium-density hardwood approximately 540–600 kg/m <sup>3</sup> (air dry). Easy to work and not too heavy.
Texture	Coarse and uneven, due to large pores; gives a rustic and natural look.
Moisture / Movement	Stable once seasoned; shrinks less than many other hardwoods.
Workability	Machines, cuts, and sands easily. Can split when nailed, so pre-drilling is recommended.
Durability	Naturally durable and resistant to decay due to high tannin content suitable for indoor and some outdoor uses.
Finish Quality	Takes stain and polish well, though open pores may need grain filler for a smooth finish.
Hardness	Moderate hardness firm but not brittle; softer than oak but stronger than pine.

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# ASSESSMENT

# PULL YOUR TABLE INTO PARTS. LIST THE ATTRIBUTES OF THAT PART.

You need to:

- Choose a part of your table to develop.
- List the physical and functional attributes of the part.
- Test and trial your part to gain information to understand if it will meet the specifications.
- Use two stakeholders to help inform you in decisions in the development of the part.
- Analyse how stakeholder feedback informed you in the decisions you made in the development of the part.
- Continually refer to your brief and stakeholders' specifications.



# DEVELOPMENT

## LEG DESIGN AND LEG JOINING METHODS

## EXAMPLE

Physical attribute	Description
Shape	Aesthetic and stability
Size	Thickness and length
Finish	Smooth, beveled edge, sanded, painted, or varnished to protect and improve appearance.

Functional attribute	Description
Strength & Stability	Must support the weight of the tabletop and any load placed on it without bending or breaking. Provides a steady base to prevent wobbling.
Durability	Withstands repeated use, impact, and movement over time without loosening or damage.
Safety	Smooth edges and solid structure prevent tipping or injury.

# DEVELOPMENT

## LEG DESIGN AND LEG JOINING METHODS

## EXAMPLE



*Domino method. This is a quick and accurate joining method. It is a floating mortise and tenon. I did the joint on the tightest setting making it have less movement and making it stronger than the other settings. This joint was strong enough to hold up the table and to stop any movement (rocking). This joint would meet my stakeholders' specifications and be stable and durable.*



*Dowel joint. After trialling the dowel joint, I found that while it gave a neat appearance and was easy to align, it was not as strong as the domino joint for side-to-side motion. (Rocking) This joint would not be suitable for the table as it does not meet the specifications of my stakeholder, who wants a strong, stable and durable table.*

**STAKEHOLDER FEEDBACK:** Dad: "When I leaned on the table leg, it felt sturdy. However, when I pushed it from the side, there was a little bit of movement, so the leg might need to be strengthened to stop any wobble over time. I'd be worried that if it's used a lot, the joints could loosen, especially if kids lean on it. Maybe adding some extra support or a stronger joining method would make it more durable. Overall, it looks well made and fits the design nicely but it just needs a bit more strength to make sure it lasts".

**HOW DID STAKEHOLDER FEEDBACK INFORM THE DEVELOPMENT OF THE OUTCOME:** *From my dad's feedback, I realised that while my table legs looked strong, they needed to resist more side movement (racking) and be more durable over time. The feedback about the joints possibly loosening made me decide to trial a stronger joining method.*

# DEVELOPMENT

## LEG DESIGN AND LEG JOINING METHODS

## EXAMPLE



*Bridle joint: I compared dowel, domino, and bridle joints for joining the coffee table legs. While dowel and domino joints provided alignment, they were less effective at resisting racking and long-term stresses. The bridle joint, however, offered a larger surface area for glue, interlock, and excellent resistance to twisting and wobbling.*



*Mortise and tenon method: I chose a mortise and tenon joint over dowel, domino, and bridle joints because it provides the best strength, stability, and resistance to racking. The interlocking design of the tenon fitting tightly into the mortise distributes pressure across a larger surface area, making it more durable under daily use.*

**STAKEHOLDER FEEDBACK:** Teacher: Look at a more traditional joint like a mortise and tenon or a bridle joint. This may give the leg better strength and stability. These joints can be tricky to make and will take a lot longer to do compared to the dowel and domino joining methods.

**HOW DID STAKEHOLDER FEEDBACK INFORM THE DEVELOPMENT OF THE OUTCOME:** My teacher said that while dowel and domino joints aligned the coffee table legs well, they might not provide long-term durability or withstand racking as effectively as other joints. Based on what he said, I chose to use mortise and tenon joints, which offer an interlock and spread loads more evenly. This improved the strength, stability, and durability of the table legs.

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# DEVELOPMENT 1

# DEVELOPMENT 1

:

Physical attribute	Description

Functional attribute	Description

:

# DEVELOPMENT 2

# DEVELOPMENT 2

:

Physical attribute	Description

Functional attribute	Description

:

# DEVELOPMENT 3

# DEVELOPMENT 3

:

Physical attribute	Description

Functional attribute	Description

# PLAN DRAWING

STAKEHOLDER FEEDBACK:

CHANGES TO PLAN: .



# FINAL COFFEE TABLE IN LOCATION

EXAMPLE



EVALUATE THE OUTCOME AGAINST THE BRIEF, SPECIFICATIONS AND FEEDBACK TO DETERMINE WHETHER IT IS FIT FOR PURPOSE: The final outcome is fit for purpose in our living room and meets the brief and specifications I discussed with my stakeholders. The **rack underneath is strong and functional**, able to **hold heavier items like books and laptops**, which helps keep the living room tidy. The **height** of the table (520mm) matches our **couch height**, so it's **comfortable and easy to reach** when sitting down. There's also **enough space under the rack to vacuum easily**, which makes it practical for everyday use.

I chose to use **two different timber tones a dark and a light wood** so the table **matches our other furniture** but still **stands out as a feature piece**. The **construction is sturdy and durable**, so it can **hold heavier items without wobbling or bending**.

Feedback from my stakeholders helped me make improvements to the **design, finish, and materials** so it would **look good and work well in the space**. Overall, I'm really happy with how the table turned out it's **strong, practical, and looks great**, exactly what we wanted for our living room.

# FINAL COFFEE TABLE IN LOCATION

IMAGES OF COMPLETED COFFEE TABLE  
IN ITS ACTUAL OR MODELLED ENVIRONMENT.

EVALUATE THE OUTCOME AGAINST THE BRIEF, SPECIFICATIONS AND FEEDBACK TO  
DETERMINE WHETHER IT IS FIT FOR PURPOSE:

# GLOSSARY

For a **coffee table**, the "physical and functional requirements of the outcome" would specify the attributes that the table should meet in both its appearance (physical aspects) and its performance (functional aspects).

## Physical Requirements:

1. **Dimensions:** The size of the table (length, width, height) to fit within the space it's intended for (e.g., in a living room or lounge area).
2. **Material:** The type of materials used for construction, such as wood, metal, glass, or a combination.
3. **Weight:** The weight of the coffee table, which might impact its mobility or stability.
4. **Color/Finish:** The surface finish, texture, or color to match the room's aesthetic (e.g., matte, glossy, stained wood, etc.).
5. **Shape:** The table's shape (rectangular, round, square, etc.) to complement the surrounding furniture.
6. **Stability:** It should be sturdy and capable of withstanding normal use without tipping over or wobbling.

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# GLOSSARY

## Examples of fitness for purpose in a coffee table:

- **For a family with young children:** A round, low coffee table with rounded edges, made from durable materials like wood or plastic, that can handle wear and tear and be easily cleaned.
- **For a small apartment:** A coffee table with built-in storage or one that is multi-functional, such as a table that can be raised or has an extendable surface, helping to save space.

In summary, a coffee table is **fit for purpose** if it serves the intended function (e.g., providing a surface for items, storage, or aesthetic value) while meeting the physical, functional, and safety requirements of the user and space.

**Proportion in furniture design** refers to the relationship between the sizes and dimensions of different elements within a piece of furniture, and how these elements relate to each other and the surrounding space. Good proportion ensures that the furniture is visually balanced, functional, and harmonious with the environment it is placed in.