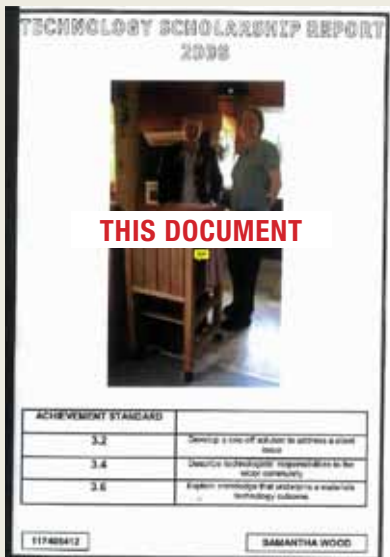
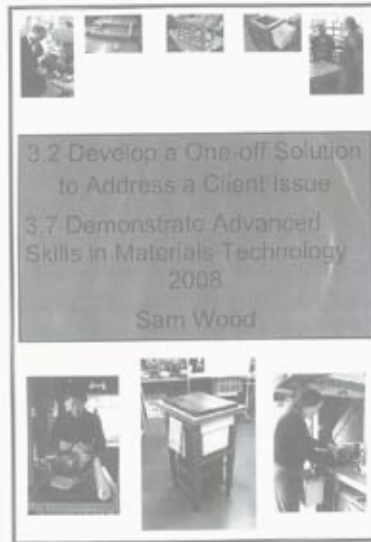


SCHOLARSHIP REPORT
 (comprehensively annotated)


www.techlink.org.nz/student-showcase/Scholarship/Sam-Wood/Sam-Wood-schol-report.pdf

PORTFOLIO: 1/2
 (two annotations)


www.techlink.org.nz/student-showcase/Scholarship/Sam-Wood/Sam-Wood-portfolio-1.pdf

PORTFOLIO: 2/2
 (no annotations)


www.techlink.org.nz/student-showcase/Scholarship/Sam-Wood/Sam-Wood-portfolio-2.pdf

TECHLINK SCHOLARSHIP EXEMPLARS
EXEMPLAR DESCRIPTION

This Scholarship Exemplar presents a student's portfolio of evidence which was submitted for Technology Scholarship Examination.

The exemplar has been annotated with 'call outs' that highlight the evidence presented by the student and 'Commentary on Evidence' boxes.

These annotations show where:

- student evidence was presented that exemplifies scholarship expectations
- opportunity existed for additional evidence to be presented

The intent of this exemplar is to assist teachers and students to develop an understanding of the nature of the evidence required for award of the Technology Scholarship standard.

Other Techlink Scholarship Exemplars can be found at: www.techlink.org.nz/student-showcase/index-scholarship.htm

In 2008 Samantha Wood was awarded a New Zealand Scholarship in Technology for her work on the project Butcher's Block.

Butcher's Block is a Technology unit that focused on the development of a preparation and food storage unit for a client with limited space in their kitchen and a desire to minimise her impact on the Earth's environment. The student consulted a variety of practising technologists to inform her own practise.


In this reflective report and supporting evidence, this student has demonstrated synthesis and integration of technological experiences in bringing together knowledge, skills, ideas and methods to allow the successful technological outcome (butcher's block) to be placed in its intended environment. There is evidence of elegance in their technological practice and the final outcome.

This student has justified how the technological practice was undertaken and how the outcome meets her clients needs by that meets all the specifications.

She has critically reflected on the information, understandings and practices of practising technologists from a range of contexts and how this was used to inform her own practice when developing the outcome for her client.

TECHNOLOGY SCHOLARSHIP REPORT 2008



19/04/10 6:42:33 PM 

Options ▾

Photographic evidence of skills and knowledge to create a quality outcome.

ACHIEVEMENT STANDARD	
3.2	Develop a one-off solution to address a client issue
3.4	Describe technologists' responsibilities to the wider community
3.6	Explain knowledge that underpins a materials technology outcome

117408412

SAMANTHA WOOD


CONTENTS

3.2 DEVELOP A ONE-OFF SOLUTION TO ADDRESS A CLIENT ISSUE


- ◆ Project Overview
- ◆ Key Project Milestones
- ◆ Initial Concepts and Development Stages
- ◆ Consideration of Social and Environmental Implications
- ◆ Construction Development of the Solution
- ◆ Skill and Knowledge Development
- ◆ Consultation and Feedback (Client, Stakeholders, Wider Community)
- ◆ Implications for Future Practice
- ◆ Critical Reflection (My own Practice and Others)

3.4 DESCRIBE TECHNOLOGISTS' RESPONSIBILITIES TO THE WIDER COMMUNITY

3.6 EXPLAIN KNOWLEDGE THAT UNDERPINS A MATERIALS TECHNOLOGY OUTCOME

19/04/10 4:06:25 PM  **Options** ▾

Clear indication on the format the scholarship report undertakes. All specified areas are covered.

19/04/10 4:06:39 PM  **Options** ▾

Knowledge gained from working with professional technologists (3.4 and 3.6) has informed the student's technological practice is evident throughout the report.

PROJECT OVERVIEW

IDENTIFICATION OF CLIENT AND ISSUE (Refer to Pages 4 - 6 of Folio 1)



I first approached Mrs Ashton about designing a storage unit for her at the end of 2007, also advising her that I would prefer to work with some sort of recycled timber as my main material. In the first week of Term 1 in 2008 Mrs Ashton asked if, instead of making something for her, I would design and construct a unit for her daughter, Libby Ashton, to solve the extreme food preparation and serving space difficulties Libby was experiencing in her kitchen environment.


This seemed like a good option because:

- I was keen to solve a real problem for a stakeholder;
- This sort of project should be within my current skill level, or would involve knowledge and skills I could acquire or learn during the development phase;
- I would have good access to my secondary stakeholder, Mrs. Ashton, who is a highly regarded and skilled technology teacher at my school and who also knows my primary stakeholder and her environment well.

The one downside of having Libby Ashton as my client was that she lived 1½ hours north of Auckland and therefore access to her and the environment into which the outcome would be installed could be difficult. I believed this disadvantage would be offset to some extent by the personal knowledge my secondary stakeholder had of my primary stakeholder's issue, preferences and environmental situation. This did prove to be a significant advantage during the design development process.


ESTABLISHING THE CONTEXT AND FIRST INTERVIEWS (Refer to Pages 7 - 9 of Folio 1)

I scheduled my first consultation with Mrs Ashton (as secondary stakeholder) on 12 February 2008 to learn more about her daughter's background and establish a clear overview of Libby's kitchen environment and the problems that she was encountering. It was at this stage that I encountered some difficulties scheduling a time to interview Libby herself, because she was very busy and also heavily pregnant with her first child. I was not able to schedule an interview until early the next week, and on 18 February 2008 carried out my first interview with Libby by phone.


During the process of the interview I ascertained that Libby Ashton was a 32 year old woman, married to Marcote. They now have one young baby, Atariki, who was born shortly before the construction stage of my project commenced. Libby is passionate about her nature based lifestyle, providing her family with mostly home-grown, organic foods and preferring to minimise her impact on the earth's environment. She is a very environmentally aware person who uses sustainable products whenever possible. 

Libby and Marcote's house is situated in rural North Auckland, a long way from the shops, so she needs quite a lot of efficient storage space for the food provisions that she both buys and grows herself. Food preparation and hosting her family and friends has always played a very big part in Libby's life, so the kitchen is an area in the house that she frequents. However, Libby is not the only person to spend a lot of time in the kitchen environment - her husband Marcote also gets involved and helps with food preparation and washing up, as does her mother and other family members when they are visiting.



19/04/10 4:06:10 PM 
Options ▾

Sam began to think about a suitable client issue at the end of Year 12.

19/04/10 4:05:59 PM 
Options ▾

Demonstrating her understanding of her clients lifestyle and ethical stance.

Libby explained that her current kitchen environment was small and cramped, with very limited bench space and storage space either in or adjacent to the kitchen area. This has made it hard for her to prepare and serve food from there, and because of the lack of storage space the kitchen has always looked untidy, with utensils and ingredients taking up all of the available bench space. The composting system comprised of small, unattractive bins that sat on the bench top and filled up very quickly. The tea towels and larger kitchen utensils also did not have an allocated space so were discarded wherever a space could be found in the area.

From this first interview with Libby Ashton it was clear that she had a very real problem that I believed I would be able to solve for her. I chose Libby as my primary stakeholder as she is the main user of the kitchen. The next step was to analyse my first interviews with both Mrs Ashton and Libby Ashton, identifying the key stakeholder issues and requirements and starting to think about an outcome that would efficiently solve as many as possible of Libby's food preparation, serving and storage space issues in her kitchen environment.



INITIAL DESIGN BRIEF (Refer to Pages 10 - 11 of Folio 1)

From the analysis of these first interviews, I was then able to format and construct my initial design brief and key specifications. Although this initial brief only encapsulates the first top-of-mind problems identified by the stakeholders, by clarifying the main issue, aim, and restrictions and considerations, it serves to focus both the technologist and the stakeholders on thinking more deeply about the key factors that really are important to them. It is these key factors that have the strongest influence on the final agreed design.

My Initial Design Brief was as follows:

THE ISSUE:

My primary stakeholder has extremely limited storage space and bench space in her kitchen area. This means that she finds it difficult to find the space to prepare and serve food. Also, the area is always untidy as my stakeholder does not have enough storage facilities to hold and put away all of her kitchen utensils.

AIM:

To produce a food preparation and storage unit that will solve my primary stakeholder's issues. It needs to incorporate both bench and storage space, be easily accessible, transportable and blend in with the simple country rustic style house where the unit will be installed.

19/04/10 4:04:50 PM
Options
The issue is identified.

19/04/10 4:05:00 PM
Options
Identification of the specific problems that require resolution.

19/04/10 4:05:09 PM
Options
Photographs demonstrating the investigation into the social and physical environment from which the authentic issue has been identified.


19/04/10 4:05:19 PM
Options
A clear definition is articulated of the issue to be addressed and the problem to be resolved

19/04/10 4:05:28 PM
Options
An outcome is clearly articulated with initial attributes.

The restrictions and considerations that needed to be taken into consideration when designing the outcome for Libby were identified at this stage and are set out Page 10 of my Portfolio. The three main restrictions involved the deadline for completion of the outcome (the end of Term 3 in September 2008); the initial maximum budget expectation of \$400; and the need to use sturdy, stable, non-corrosive materials in designing the outcome. Other considerations at this stage were my preference to extend my current skills and experience working with wood, and the limited amount of space available in Libby's kitchen to put a storage unit (noting that Libby had already identified a particular space beside the bench where the unit could be installed, which meant it would be preferable for its height to be the same as the existing bench).


BRAINSTORMING THE KEY FACTORS (Refer to Pages 12 - 14 of Folio 1)

As Libby's house is 1½ hours north of Auckland it was going to be difficult to schedule a visit there. To enable me to visualise her environment, therefore I asked Mrs Ashton to take some photographs of the house and the kitchen area, focusing on any particular problem areas that had been identified in the Initial Design Brief. This gave me a clearer view of my stakeholder's issues and requirements, and better knowledge of the key factors that were important to my stakeholder and how they would impact on the design process.


To gain a deeper understanding of the identified issue, the key factors and how they interacted and linked with each other, I then created a variety of mind maps. Summarising knowledge in this way helps the technologist to fully consider all of the key factors that are important to the stakeholders and relate them back to the identified issue to find out which ones should be top priority during the design and construction process. 


SOURCING OF TECHNOLOGISTS (Refer to Plan of Action – Term 1)

In Week 6 of Term 1, I was able to source five technologists whose knowledge I hoped to be able to use to inform my own practice during the year. Two of these people came from my own field of practice (furniture making), one from a related field (sculpture), one from a pure design and planning field (architecture) and one from an advisory body (Designers Institute). I asked these technologists for permission to call them to discuss any problems that may arise during the course of the design and construction of my proposed outcome (a preparation and storage unit made of wood).

I then arranged to meet up with the two technologists in my own field for an early discussion on any issues they perceived I needed to consider at this early stage. The reason for this was to use these people's own knowledge of and experience in developing technological outcomes to identify flaws in my planning and design techniques either before they arose or at an early stage. I could then alleviate any impact on my timeline of activities as documented in my Plan of Action. I also wanted to ensure that the final outcome I produced for my stakeholder would be fit for purpose and solve all of her identified issues. I knew the knowledge of my external technologists could help with this. 

As well as seeking advice from these technologists to inform my own practice I was also able to gain an understanding of what they considered to be their responsibilities to the wider community when they were creating a product, and what strategies they put in place to meet these responsibilities and mitigate any risks.

19/04/10 4:07:11 PM 
Options ▾
A critical reflection that justifies her practice.

19/04/10 4:03:50 PM 
Options ▾
Evidence of how she used professional technologists, from a range of contexts, to inform her own practice.

EXISTING PRODUCT RESEARCH (Refer to Pages 15 -17 of Folio 1)

The next step I took was to research and review existing products that are used for storage. The process I undertook here was to identify a range of products that could possibly solve my stakeholder's storage and bench space issues. I then looked closely at these products and identified their different attributes, then compared the list of functional specifications of each product back to my stakeholder's own requirements and specifications. This helped me to gain a clearer view of the shapes that would work best and also started me thinking about the technical, environmental, social, economic and cultural aspects I would have to take into consideration when coming up with a recommended outcome for my stakeholder to consider.

CONCEPTUAL IDEAS AND SECOND STAKEHOLDER INTERVIEW

(Refer to Pages 18 - 22 of Folio 1)

Twelve initial concepts (see Pages 18 – 19) and then 3-D Models (Page 22) were formulated following the existing product research I had carried out on different design ideas that had the potential to meet my stakeholder's early design specifications.

I then presented these concepts to my stakeholder, along with a range of other questions that had come to mind during the research phase. Her feedback was excellent and gave me a real steer on her preferences in relation to shape and features, as well as further insight into the particular measurements the unit would need to be.

This stage of the process really highlighted for me the advantages of regular consultation sessions with your stakeholder when a technologist is designing a one-off, unique piece of furniture. It also made me wonder how Jonathan Symons produces his own unique designs without any direct feedback from the person he is making it for. That would certainly be a big risk if the stakeholder was paying for the outcome rather than receiving a gift.

DESIGN DEVELOPMENT (Refer to Pages 23 - 32 of Folio 1)

The next task was to develop my conceptual ideas, by taking my stakeholder's preferred concept then modifying it to come up with different options of what could and could not be included in the final design. I also took into account my stakeholder's key points of clarification and additional requirements that she shared with me during the second interview. These revised concepts were backed up with research on the different materials that could be used to construct the unit to give me a clearer understanding of which materials would work best for my stakeholder.

When going through this design development process, I also needed to make sure that the outcome that I was designing would be 'fit for purpose' and would complement the existing structures and features in my stakeholder's kitchen environment. One tool I used to assist here was to take mock-ups of the different concepts and place them on a full page photograph of Libby's kitchen, situating these mock-ups in the exact place where the new unit would be installed (see Situating the Outcome on Page 24). This helped to visualise what the finished outcome could look like in the chosen environment and what dimensions the unit would have to be to fit in well.

Consultation with and feedback from my stakeholder was invaluable at this stage of the design process as I was also being influenced by my external technologists to make particular design decisions (for example, Simon Coughlan from Rose & Heather had a lot of suggestions on which way the grain of the wood should lie and what sort of joints would be best in a damp environment). I therefore took these points into consideration and got feedback from my stakeholder about a number of aspects of the proposed design.

19/04/10 3:55:29 PM
Options
Pertinent research on existing products that guided technological practice.

19/04/10 3:56:48 PM
Options
Ongoing feedback from client and stakeholders which informed practice.

19/04/10 3:55:30 PM
Options
Clear references back to her portfolio to show how she was undertaking experimentation to resolve the issue.

19/04/10 3:55:53 PM
Options
Reflections on how information from other technologists informed the development of the technological outcome. Interaction with a wide range of stakeholders.

A thorough design development process enabled me to become aware of and incorporate into the design new key factors as they emerged, either from my research or from new stakeholder requirements. I then drew up a redefined brief (Page 33) incorporating both the original and new key factors and reprioritising them to reflect my stakeholder's views.

FINAL BRIEF AND FINAL DESIGN (Refer to Pages 36 - 41 of Folio 1)

Before formalising my Final Brief and Design I spent time reflecting on the tasks I had completed to date and checking my progress on key tasks against my Plan of Action to see whether any further research was required. I also planned ahead to gain a clear understanding of what tasks were outstanding and that needed to be completed for me to be able to start production.

After completing this review and receiving help from Rose and Heather about the joints they thought would be most useful for the construction of my project, I was then able to formulate a final brief summarising the final specifications for the outcome. I also prioritised and justified the important key factors that related to the issue.

I created a prototype of the final design to demonstrate to my stakeholder what the final solution that I had designed would look like. I used the tools in Google Sketchup, drawing an orthographic view of the design before building the prototype model. Not only was this useful for my stakeholder, it also helped me to visualise and take into consideration the possible design challenges I may face during the manufacture and construction phase.

It was at this stage that Mr LeMesurier, a designer, fine craftsman and technologist visited our Technology class and spoke to us about the design process and the importance of accurate dimension setting. He was particularly helpful to me, sketching my proposed butcher's block design in my Visual Diary and marking it up with dimensions that would ensure my unit would be fit for purpose.

From this sketch I then prepared a construction brief. A cutting list was also prepared at this stage. I sought the help and advice of Grant Williams and Brad Jowitt for these outputs, as they both have prior knowledge of working with fixed price contracts and within strict budget limitations. The construction brief and cutting list gave me a concise summary of the different materials that would be needed for the final outcome, how much of each was required, and any applicable dimensions/measurements. The cutting list also gave an overall price indication of what the final outcome would cost. I shared both of these summaries with my stakeholder to ascertain if she had any problems with the materials or total cost and to seek her permission to proceed to production based on these specifications and costs.

It is at this stage that I realised the benefits of on-going communication with my stakeholder throughout the design process. This had allowed me to take her feedback into consideration and amend the design specifications as I went, saving time and resulting in an easy sign-off process without any further changes from my stakeholder.

PRODUCTION PHASE (Refer to Pages 42 - 55 of Folio 1)

Having received my stakeholder's approval to the final design and costs I then proceeded to production of the solution. Before doing so, I carried out background research on the different machines that I needed to use for the construction of the outcome. I also reviewed the different Codes of Practice applicable to each piece of equipment, as the knowledge I had obtained from my technologists indicated that it was important to understand both how they functioned and the safety measures I needed to follow to prevent accidents and hazards around the workshop.

19/04/10 4:02:27 PM
Options

Clear references back to her portfolio, demonstrating evidence of technological practice.

19/04/10 4:02:36 PM
Options

Evidence of undertaking brief development.

19/04/10 4:02:44 PM
Options

Planning: how measuring and costing was influenced by practicing technologists.

19/04/10 4:02:57 PM
Options

Continuous reference throughout to student's technological practice in the portfolio.

19/04/10 4:03:06 PM
Options

Reflections on codes of practice and how they were adhered to.

This review helped me to gain the knowledge I needed about how to safely operate and work with the different types of machinery.

I then constructed and manufactured a one-off solution based on the final brief, final design and construction brief and cutting list. On-going communication with my stakeholder throughout the production phase meant that some minor changes and additions were made to the design during construction, resulting in an optimal solution that both met all of her requirements and was fit for purpose.

Regular consultation with my source technologists about different problems that I encountered during the production phase also provided me with additional knowledge to inform my practice.



19/04/10 4:07:35 PM

Options

Evidence of interacting with a wide range of stakeholders to determine the specifications.

19/04/10 4:07:44 PM

Options

Photographs used to illustrate production of technological outcome within acceptable codes of practice.


KEY PROJECT MILESTONES


Key project milestones for me were:	Date Completed
<i>Decided on a Stakeholder & an Issue</i>	12 February
<i>First Stakeholder Interview</i>	18 February
<i>Initial Brief & Specifications Documented</i>	22 February
<i>Existing Products Researched</i>	29 February
<i>External Technologists Sourced</i>	14 March
<i>Concepts Designed & Evaluated</i>	26 March
<i>Finalised Design, Specifications, Construction Brief & Costs</i>	16 May
<i>Stakeholder Approval to Proceed</i>	23 May
<i>Materials Ordered</i>	6 June
<i>Knowledge Gained on Machinery Functions & Safety Practices</i>	10 June
<i>Wood & other materials arrived</i>	16 June
<i>Cutting Completed</i>	27 June
<i>Frame Finalised</i>	4 July
<i>Butcher's Block Assembled</i>	5 September
<i>Finishing Touches Applied</i>	12 September
<i>Installation Completed & Stakeholder Feedback</i>	17 October

The key decisions made in relation to the above milestones and the justification for making these decisions are discussed in the preceding section of this report – Project Overview.

Issues that arose during the design and production process that impacted on my progress were:

- 15 February – stakeholders' busy schedules delayed first interviews and therefore formulation of my initial design brief;
- 20 June – requirement to source a buzzer externally to prepare wood for production;
- 25 July – had to order more wood for vertical slats;
- 5 September – difficulties sourcing wheel castors with braking system;
- 12 September – When wheels attached unit was too high and needed to be cut down.

I found that the best way to ensure key milestones were met on time was to refer regularly to my Plan of Action, review outstanding tasks and seek assistance at an early stage if problems arose. Both the school technology teachers and my external technologists were invaluable here, and I am indebted to them for the knowledge they were able to impart to inform my practice, especially when I was confronted with unforeseen problems. 

19/04/10 4:08:02 PM 

Options ▾

Reflections on how planning assisted the student's practice.

INITIAL CONCEPTS AND DEVELOPMENT STAGES




Conducting thorough research throughout my technological practice was critical to both the development and production process that I undertook. There were four significant research phases – Current Situation (Problems and Issues); Existing Products in the marketplace; Conceptual Ideas and Development; and Materials Research and Identification.


Insight into these particular areas was required to enable me to design and create an outcome which would meet my stakeholders' requirements as well as solving their identified issue.

CURRENT SITUATION (Refer to Pages 5 - 7 of Folio 1)

The first task was to research my stakeholders' current situation. My first interview was with my secondary stakeholder, Mrs Ashton, in Week 2 of Term 1, (12 February). The interview with my primary stakeholder, Libby Ashton, could not be scheduled until the next week (18 February), which was bad planning on my part as it put me a little behind plan in developing my initial brief and specifications.

As a result of these interviews the following requirements were specified:

- ◆ The outcome needed to have a large, flat surface and also be able to store kitchen utensils so they are easily accessible.
- ◆ The unit needed to incorporate something to make the disposal of kitchen waste easier and more hygienic.
- ◆ The stakeholder preferred the outcome to be made out of recycled and untreated wood.
- ◆ The top of the unit needed to be hygienic and easy to clean and maintain.
- ◆ The design needed to fit in with the simple, rustic country style of the home.
- ◆ The stakeholder wanted the unit to be transportable and moveable. 

Having acquired and analysed this information direct from my stakeholders I realised that the outcome I designed would need to be versatile, functional, and sustainable if it was to fit into the kitchen environment. 


This information assisted my design process, as I was able to get gain knowledge of what my stakeholders' wanted the solution to do and also what requirements needed to be factored in so that I would be able to create a solution that would solve the identified issue to its best ability.

EXISTING PRODUCTS (Refer to Pages 15 - 17 of Folio 1)

From my initial brief and specifications I was able to carry out research on the existing products in the market place, utilising sources such as magazines and the internet. I documented this in my portfolio, picking out the attributes of each product and comparing them to my stakeholder's identified issue. I also discussed the benefits and downsides of these existing products with one of my sourced technologists, Simon Coughlan from Rose and Heather, as they are leading furniture makers.

The conclusion I reached was that there was no current product in the marketplace that would solve and meet the list of identified needs and requirements. Existing products were: not aesthetically pleasing; too large and wide for the chosen environment; extravagant with little functionality; or had no real storage or bench space.



19/04/10 4:09:06 PM 

Options ▾

The following section justifies the way the the student works through their own technological practice to address the identified problem.



19/04/10 4:09:14 PM 

Options ▾

Explains the complexities of the situation.



19/04/10 4:09:22 PM 

Options ▾

Explains how the complexities of the situation were identified and explored

This research allowed me to gain knowledge about what types of products were available in the market and highlighted that, as there was nothing suitable, I would need to come up with a creative one-off design to solve my stakeholders' identified issues, needs and requirements.

INITIAL CONCEPTS AND DEVELOPMENTS (Refer to Pages 18 - 40 of Folio 1)

Architect Brad Jowitt, advised me about how important it was to jot down all of your ideas and spend a lot of time on the design phase when producing an outcome, as this means you are more likely to eliminate issues during the construction process. As a result of this knowledge, and using my existing product research, I started to brainstorm some conceptual designs that would take into consideration the key factors and specifications identified by my stakeholder.

I drew simple, rendered sketches of each design idea I came up with. The concepts were quite broad-ranging, showing a variety of examples of possible preparation space and different storage options that could be used to overcome my stakeholder's identified issues. For example, some of the concepts were: a simple long, high table with a bin positioned in the middle of the top and a shelf underneath; a cabinet with storage shelves and a roller door; a two piece preparation unit; and a butcher's block type unit.

I shared these original conceptual drawings with my stakeholder, pointing out the design characteristics of each option. Libby identified that Number 4 would work best for her as it was simple, not too large and met most of her advised requirements and needs. I gained new information from this consultation with my stakeholder and had clearer direction on how to develop my design further. I then modified and developed design Number 4 further, including various options for my stakeholder to choose from.

I also conducted relevant research on the materials that could be used to produce the design, including different wood types and accessories. I consulted with my stakeholder once again, as I had gained knowledge from the technologist in the field, Rose and Heather, that it was vital to clarify and obtain agreement to any changes to design specifications so that the final outcome will be what the stakeholder expects and also fit for its intended purpose.

It was at this stage that my stakeholder gave me excellent feedback about what type of wood she would prefer to be used for the outcome (recycled rimu) and also what accessories would be the most useful to her (for example, a tea towel rail). This feedback enabled me to gain a clear understanding of the changes that my stakeholder wanted me to include in the design. As a result of this I felt that it was necessary to redefine my brief and re-evaluate the specifications.

I then moved on to formulating the final brief, which included all of the key factors, reprioritised following the several discussions held with my stakeholders. I also prepared a construction brief so that my stakeholder could see the resources I was proposing to use to produce the outcome, as well as the dimensions required for the unit to fit into the chosen environment.

A final design was drawn up and a prototype model constructed so my stakeholder could clearly visualise the proposed outcome in 3-D form. This also enabled me to explain to my stakeholder certain aspects of the design and the techniques that I would use when constructing and producing the outcome. Another advantage of the prototype model was that I could actually test out the different techniques and ensure that they would work both practically and technically. It also helped during the construction phase of my final outcome to be able to identify from the mock-up where different parts went.

By communicating well with my stakeholder and the specialist technologists in the field, systemically working through the different stages of the design – concepts, design development and on to final design – I was able to create and design a final solution that I knew would be fit for purpose and meet the requirements of my stakeholder.

19/04/10 4:36:46 PM

Options

Clear reference back into the portfolio evidence of having undertaken technological practice to resolve the issue.

19/04/10 4:40:46 PM

Options

Justification of the student's technological practice in order to address the identified problem.

19/04/10 4:12:50 PM

Options

Explanation of the interactions the student had with their client.

19/04/10 4:12:41 PM

Options

Explanation of how the student's technological practice was informed by analysing and critiquing the practice of practising technologists.

19/04/10 4:12:33 PM

Options

Explanation of the interactions with client how this had a bearing on further brief development.

19/04/10 4:12:24 PM

Options

Student has developed a model to communicate her design thinking to her client. This would have demonstrated how she brought together knowledge, skills and ideas to justify her ideas to meet the client's needs.

CONSIDERATION OF SOCIAL AND ENVIRONMENTAL IMPLICATIONS

Throughout the design and construction process of my technological solution I had to be aware of and take into account the social and environmental impacts that could have an effect on the outcome.



SOCIAL IMPACTS (Refer to Pages 56 - 60 of Folio 1)

One social impact that was important for me was to ensure that the butcher's block preparation and storage unit was ergonomically suitable for my stakeholder's chosen environment.

I was able to meet this requirement by making the unit not too heavy or wide. Also by adding in the twin wheel castors with a braking system as a functional design feature, it meant my stakeholder was able to transport the unit not only around the kitchen area as she had requested, but also to different locations around the home environment (such as onto the outdoor deck or into the dining room).

Incorporating the castors with a locking device also meant that the butcher's block unit took into account the needs of the wider community. The locking device ensured the unit was structurally safe and stable for both visitors and family members, like Baby Atariki, and was less likely to cause harm or be hazardous to anyone.

Another social impact was the flexibility and adaptability of the unit. It solved the identified issues of lack of food preparation and storage space in the environment and was also acknowledged by my stakeholders as a visually attractive furniture showpiece, creating a focal point in my stakeholder's kitchen.

Although my primary stakeholder has chosen to use the unit principally as an extension to her bench space, because of its adaptability she can also move it out onto the deck or beside the dining room table and use it as extra table or serving space for entertaining purposes.

ENVIRONMENTAL IMPACTS (Refer to Pages 56 - 65 of Folio 1)

It was crucial for the success of my own practice to have a good knowledge of the chosen environment because I needed to present a design and choose materials that would complement the rustic, country style of the house.

Because my stakeholder's home is made from natural wood products, wood was also the material that was most suitable for this outcome. However, because one of my stakeholder's key specifications was that the material chosen had to be environmentally friendly and not have adverse effects on the environment itself, I used recycled rimu as the main material for the butcher's block. I knew from the background research that I conducted that this material was sustainable and would fit nicely into my stakeholder's environment. This material also would not impact adversely on the environment, and recycled rimu added a touch of beauty to the kitchen environment because of the elegance and simplicity of the finished product.

Throughout the production and construction phase, I was also very careful to minimise waste and use sustainable products as this ensured that my finished outcome was as sustainable as possible and, as specifically requested by my stakeholder, would have minimal adverse impact on her environment and the wider community. For example, taking the lead from Jonathan Symon's own practice, I saved my rimu off-cuts. This proved to be a good decision, as I later reused them to construct the extra chopping board that Libby asked for to sit on top of the unit. I also used non-toxic finishes and glues as this ensured that my product would not be hazardous to my stakeholder and the indirect stakeholders using or visiting the environment in the future.



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Options

Evidence of how understandings of the social and physical environment informed the final outcome.



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Options

Critical reflection on the student's sustainable practises that meet her clients needs to minimise the impact on the Earth's environment. Also evidence of the technological practice of others and how this informed her practice and her justification of sustainable practices.

MAINTENANCE (Refer to Pages 56 - 65 of Folio 1)

Only minimal maintenance will be required to keep the components of the final outcome at the same high quality they were in when installed in the stakeholder's environment.

When producing the outcome, I had to take my stakeholder's personal family situation into consideration as I knew that because of her busy schedule and involvement with her baby, Atariki, she would not have much time to maintain or fix the product. This meant that I had to make sure that I was not using materials or accessories in the construction that would require a lot of effort or on-going maintenance to keep clean, hygienic and fresh.

For the frame of the butcher's block unit, the only on-going maintenance required is the reapplication of a coat of Linseed Oil from time to time. The compost and recycle bins should be removed and washed out regularly, as should the chopping board, which should also be rubbed down with a non-toxic finish similar to the Vegetable Oil I used. This will keep the whole unit looking fresh and hygienically clean and present a piece of furniture that is attractive and appealing to the eye.

CONSTRUCTION DEVELOPMENT OF THE SOLUTION

PLANNING (Refer to Plan of Actions and Gantt Charts in Folio 1)



At the beginning of the year I decided to use two main planning tools, as I had gained knowledge from technologists in the field that having good time management and maintaining regular planning schedules like timesheets, helps you to keep track of your progress.

The first planning tool that I used was my Plan of Action. I used this tool to plan, develop, schedule, renew and revise my ongoing work. It also allowed me to record, and factor in time for solving any problems that occurred during my design and construction process. This was an important tool for tracking achievement of or slippage in key milestones during the stages of development.

My Plan of Action indicates clearly any changes or problems that I encountered during the year. If slippages did occur, then they are easily identified on the Plan (for example, the existing product research in Weeks 3 and 4) and actions could then be taken to make up the time without disrupting the whole design process.

The second planning tool I used was the Gantt Chart. This gave an overview of the key milestones that had to be achieved each week and helped me to keep track of the completed stages in the design and development programme.



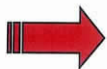
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Options ▾

Further evidence of how planning guided the technological practice.

CONSTRUCTION OF THE PRODUCT (Refer to Pages 45 - 48 of Folio 1 for a detailed version of the Flowchart of Production)

- (1) Located Recycled Rimu using the internet site, Trademe



- (2) Wood Arrived – 16th June - De-nailed and a light finish applied.



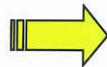
- (4) Got wood buzzed offsite at Seawood Marine.



- (3) Cut wood to pre-measured lengths using compound mitre saw.



- (5) Thickened the wood using thicknesser machine.



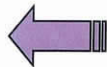
- (6) Joined wood planks together to form base of butcher's block



Used Festool Domino Joiner to join butcher's block frame together.



- 7) Sanded down frame and top of butcher's block using Oval Sander and Flat Sander.

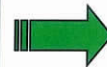


- (9) Sanded down frame and top of butcher's block by hand.



- (8) Measured and cut wood for two shelf sides and slats for bottom of butcher's block.

Domino Joined and glued them together then positioned on frame for a dry run.



(11) Cut four mitre joints for frame to affix around four sides of top of butcher's block.



(10) Different parts of butcher's block glued together to form frame.

Attached three wooden sides to top shelf of butcher's block where waste bins to be positioned.



(12) Attached waste bin frame into allocated space using screws.

Fastened top of butcher's block onto main frame.



(13) Used Teak Oil to oil outside and inside of butcher's block.



(15) Tea Towel Rail screwed underneath top of butcher's block.



(14) Twin Wheel Castors purchased to attach to bottom of legs of butcher's block.



(16) Wicker Baskets positioned on two bottom shelves.



(17) FINAL PRODUCT



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Options

Use of flow chart clearly shows construction methods and some codes of practice that lead to a quality outcome.

SKILL AND KNOWLEDGE DEVELOPMENT



I gained many new skills during the design and development process in a number of ways. Firstly, research increased my knowledge base, as I learnt from books, the internet, and other technologists about the different materials and machinery I used. Demonstrations of use of material, and test and trialling materials also informed my practice.

I also gained new knowledge and skills directly from my stakeholders, and also from the wider community, particularly the five technologists I had sourced in Term 1. These technologists gave me relevant ideas and feedback, with helpful tips on materials, techniques, processes, machinery and safety practices. They also encouraged me to look for issues before they arose and for problems that did occur during the conceptual, development and construction stages, they were there to openly assist me with suggestions and recommendations about how to solve them.

MACHINERY SKILLS

This year I was lucky enough to learn how to safely operate and use the Festool Domino Joiner Machine. This machine is a new and improved way of biscuit joining and dowel joining as it creates the domino holes to a particular size using a router piece. The machine comes with ready made mortise tendons that match the different router pieces.

It was crucial I learnt how to operate this machine properly and safely, as I used it to join and attach all of the butt joints that made up the frame of the butcher's block unit.

To get a clearer understanding of how to use this piece of machinery and how it could assist me with my project, an employee from Festool came to our school workshop to demonstrate how the machine worked and the safety procedures and practices to follow. We then each took turns using the machine with the Festool man supervising us and giving pointers on how to improve our performance. By learning this technique from a professional, I was able to gain appropriate and in-depth knowledge of the machine, which meant that I felt more confident when using it during my own construction.

I also used machinery like the Mitre Saw, Bandsaw, Power Router and the Drill Press during production. However, because of my prior knowledge and frequent use of these machines over the last few years, I did not need to seek professional advice or a demonstration on what these machines could do – I already had a clear understanding of their uses and benefits for my practice and knew the Codes of Practice and safety measures that were essential to follow when operating heavy-machinery like these.

MATERIALS RESEARCH

To gain a clear understanding of what types of materials I could use to construct the butcher's block unit, I carried out research using internet sites and books to determine the positives and negatives of each material, summarised them and then compared them to each other. I used this new information to augment my own views, and those already communicated to me by my stakeholder on material preferences (for example, recycled timber). This helped me to make final decisions on which materials would best suit and be fit for purpose in my stakeholder's environment.



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Options

Reflections on how skills and knowledge were brought together throughout the technological development.

In addition to conducting thorough research on the different materials, I also undertook some testing and trialling of finishes. For example, I tested out different types of natural finishes and also a variety of router cutters on small pieces of leftover recycled rimu. Testing this material on the same wood type enabled me to pick out which one was the most effective, but simple finishing design and which stain best complemented the tone and grain of the wood.

KNOWLEDGE FROM TECHNOLOGISTS

I was able to source and learn from five different technologists, whom I consulted regularly with during both the design and development of my outcome.

I picked up new knowledge from each one of them, but particularly from the two technologists operating in my own field, Simon Coughlan from Rose & Heather, Furniture Makers and Jonathan Symons. These technologists questioned my design decisions and gave me suggestions generated from their experiences in their own practices that I could then test and sometimes use. For example, Simon spoke to me about domino joints and Jonathan taught me a lot about dealing appropriately with waste.

More importantly, I gained a lot of information from these technologists about their own safety procedures, and also how they implement sustainability practices when producing their own technological outcomes. How to communicate effectively with stakeholders and clients was also considered to be another key prerequisite to producing successful outcomes, as were time management skills in order to meet deadlines.

While Brad Jowitt operates in a different field of technology – architecture – one of the most important tips he passed on to me was to do as many conceptual drawings and 3-D Models as possible and then prototype a shortlist of final designs if possible. This helps both you and your stakeholders to visualise what the outcome will look like when it is finished and what could work well. This form of testing and trialling was important to my technological practice as it justified some significant changes to the design before moving into the production phase of my outcome.

I was lucky to have so many other technologists with different skills to consult with and the knowledge they were able to impart definitely benefited my own technological practice.

ROSE & HEATHER
FURNITURE MAKERS



CONSULTATION AND FEEDBACK

Consultation and feedback with my stakeholders was perhaps one of the strongest points of my project this year. I learnt that if you really want to exceed the expectations of your stakeholder you should communicate with them often, but for short periods of time only. It is best to bring up only one or two design points with your stakeholders at a time so that they do not become confused or overwhelmed with options and choices. Frequent dialogue during the design and construction process also shows your stakeholder that you are interested in their feedback and their opinions really do count.



Consultation served many purposes for me, but the key one was the opportunity to keep my stakeholders up to date in a timely way so that they could make me aware of any changes or possible variations that they would like incorporated into the design as early as possible, thereby eliminating the need for rework or, worse still, ending up with a final outcome that doesn't quite make your stakeholder happy.

I communicated frequently with all of my stakeholders to ensure that my proposed design would meet their key issues and also any additional concerns identified later in the design development process. Any changes and additions that I implemented were only introduced following thorough consultation with my primary stakeholder. This ongoing communication was important to ensure that the final product would not only solve the key issues she had identified, but would also be a useful, practical addition to Libby's environment. Video taping two of the interviews (see 3rd Stakeholder Interview and Post-Production Stakeholder Interview on disks) was a good idea – especially the 3rd Stakeholder interview, as this gave me something to refer back to in relation to the development of various design features.

My communication with wider community stakeholders also had an influence on my practice as the views which were expressed by Libby's wider family group caused me to reflect on some of the decisions I made and sometimes change some of the design aspects. For example, Marcote advised he would like to be able to take the butcher's block out onto the deck as this is where visitors often congregated. This requirement prompted me to look at options for safely transporting the unit far further than just around the kitchen area, as had been originally envisaged. It also meant I needed to incorporate some way of holding the unit firm and steady after it was in position, which led to the inclusion of lockable wheel castors.

I have received a lot of positive feedback from my stakeholder and the wider community about the installed outcome. Libby is very pleased with its broadened range of uses. She is rapt that I was able to design a product that not only solved the key identified problems of lack of bench and storage space in her kitchen environment but also gave her a visually attractive unit that complements the existing fittings, but would equally look good in the dining room or outside. The butcher's block is sleek and unobtrusive in its principal kitchen environment, fitting in perfectly in its allocated space at the end of the bench.

The design of the unit has provided Libby with much more food preparation and serving space, as well as collection space for her compost and recyclables, and storage space for her utensils. This feedback is that the unit significantly increases the practicality of the kitchen environment.



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Options ▾

Critical analysis of how interactions with her client and stakeholders throughout the entire technological practice ensured a quality outcome that meet all the negotiated specifications.

IMPLICATIONS FOR FUTURE PRACTICE

I did make some changes to the final outcome during the production and construction phase of the outcome. However, I always consulted with my primary stakeholder about these alterations before implementing them. For example, I changed the design from having enclosed built-in compartments, to open shelving with wicker baskets supplied by my primary stakeholder. The baskets fit well in the unit and can be replaced as my stakeholder's needs change, thereby increasing flexibility of use. Vertical slats were also added to the cover the rubbish collection and storage bins.


There are some other modifications and improvements that I could have made to the design to increase its range of future uses. One implication of this is that it has led me to think about the importance of allocating time out for reflection at various stages of the design and production cycle. For example, my finished product could have been improved if I had thought more about possible modifications that could be made to the vertical slats on the short side of the structure without cutting them down. I could have also added hooks for utensils to the side of the butcher's block unit so my stakeholder would have the choice to hang her most frequently used utensils there instead of having to search through the wicker baskets when she needs them.

A future additional use that my stakeholder could consider would be to use the recyclable rubbish and compost bins as ice buckets for storing and cooling wine. Also, Libby could use the unit alongside the dining room table to store plates and food dishes when stakeholders from the wider community visit.

Regardless of these possible design improvements that would extend the future uses of the outcome, the final solution is fit for the purposes envisaged by my stakeholders. Ergonomically the outcome is sound and accessible for its primary users (Libby and her husband) and safe for children and visitors to be around. Routing and sanding has ensured the structure does not have sharp edges and it is a stable and balanced structure that can be easily relocated to other environments.

The finished product delivered to my stakeholder on 17th October 2008 is both "fit for purpose" and has a far greater range of future uses than my stakeholders ever envisaged.



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Options ▾

Final outcome in its intended environment, indoors and outdoors demonstrating fitness for purpose.

CRITICAL REFLECTION



To create this technological outcome, I planned for and completed all of the following stages of the design cycle:

- Identification of the Issue and Stakeholder
- Research of Existing Products in the Market
- Initial Concept Development
- Design Development
- Final Design and Prototype Construction
- Budgeting
- Production and Construction of the Final Outcome
- Effective Installation in the Environment

I believe that I completed all of these stages to a high standard of achievement, a view that is shared by my stakeholders.

Firstly, my bookwork, including Briefs, Designs, Research on Materials and Machinery and Planning Tools was kept up to date most of the time throughout the year, which is invaluable to ensuring an effective and professional design process.

Communication with my stakeholders, technologists in the field and wider community stakeholders meant that I had to be clear and concise, and this skill has never been one of my personal strengths. My visual drawings and interviews also had to be at a high standard so that they could be easily understood by the stakeholders and technologists helping and informing me with my design practice. I do believe my communication skills improved during the year though, assisted greatly by my very open, friendly stakeholders and the need for me to engage with a number of technologists outside my normal comfort zone.

Time Management was also important for this project as the outcome had to be completely finished and installed into my stakeholder's chosen environment by the end of Term 3. This meant that I had to create timelines and stick to them as far as possible, constantly referring back to my Plan of Action, planning ahead for the next stage and completing tasks on time to ensure I would meet the end deadline. I could have improved my performance in time management by scheduling appointments early and arranging to visit the location where the outcome was to be installed before starting to think about design options. This would have been far easier and more effective than having to refer to photographs and third party knowledge of the environment.

Another positive of my design experience was that the consultation with the five technologists from completely different backgrounds throughout my overall design process, allowed me to gain knowledge in relation to not only my chosen field of practice but also from other areas, like sculpture and architecture. Although having so many technologists did create extra bookwork for me, by broadening the field of consultation I learnt a lot more from design orientated and practically orientated people whose knowledge definitely positively informed my practice.

Although I did encounter a number of challenges and problems during the process (see Key Milestones) I did succeed in finding a solution to and overcoming all of these issues. For example, near the end of the construction phase when I was undertaking the late design change involving the addition of vertical wooden slats around the rubbish bins, I had overlooked that the width at the end of the butcher's block was smaller than the two other sides. This meant that all 4 of the slats cuts for this could not fit into the gap. The solution I came up with was to trim down the slats so that 4 narrower ones would fit into the allocated gap.



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A summary of the reflections and justifications of the technological practice undertaken.

Having a participative, open-minded stakeholder also contributed to my success as Libby's ongoing feedback enabled me to design a solution that would meet much more than her originally identified issue. To be able to come up with a great design and then produce the outcome to specifications, on time and within budget was very exciting and rewarding and definitely increased my personal haoura.


For me to be able to take an idea, research existing products, learn about materials, create and come up with a design, begin construction on the production of the outcome and learn to isolate and overcome potential problems that I encountered during the design process, was an amazing and invaluable experience.

I also enjoyed working in an industrial environment, learning to safely use equipment like the Mitre Saw and Drill Press. I also had the advantage of being taught by a professional how to operate a new piece of equipment - the Festool Domino Joiner. This gave me the confidence to take Simon Coughlan's advice and use this piece of equipment to constructing the joints for the frame of the unit. Without having properly researched the operation and safe use of the different equipment found in the school workshop and also watching demonstrations by professionals, I may not have been able to raise my standard of skill to the level required to complete such a complex project.

At the conclusion of my project, when the butcher's block was installed in the chosen environment, I could see that the final outcome had made a big impact on my stakeholder's life. Libby's identified issues and needs were solved by transforming them into a technological outcome that has elegance and flair. The lack of food preparation and serving space in Libby's kitchen has definitely been resolved and she has a lot more storage space too. I have created a safe, sturdy and aesthetically pleasing butcher's block unit that fulfils every one of my stakeholder's identified key factors and specifications.

Overall, I am very pleased with the finished outcome and the technological journey that I have experienced this year from the design conception phase through to the production of a finished outcome.



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Comment:
Missing a justification of why the outcome address the problem(s) and the evidence to show originality (inventiveness, innovation) in the technological practice undertaken and in the resulting outcome.

3.4 DESCRIBE TECHNOLOGISTS' RESPONSIBILITIES TO THE WIDER COMMUNITY (Refer also to Folio 2)

Having sourced five different external technologists early in Term 1 to assist my thinking and design development, I interviewed each of them to determine their views as to whether their practices had legal, ethical or moral responsibilities to the wider community.

The Tables of Questions and Responses for each technologist can be found in Folio 2, together with my assessment of these findings and a comparison between the different views. Given the experience of these technologists, it is not surprising that all five of them agreed that their responsibilities extend beyond their immediate client to stakeholders in the wider community, including suppliers, contractors, members of the general public and their co-workers.

One good example of responsibility for workers is Rose & Heather's absolute commitment to training and safe work practices. They cannot afford to have their workshop shut down by compromising these standards. Architect Brad Jowitt spoke about the site foreman's responsibilities for safety of both workers and visitors on a construction site, and even Jonathan Symons, who works alone, referred to the need for safe handling of equipment and the need to put tools away and lock up the workshop when it was unattended to ensure the safety of uninvited visitors.

The other responsibility I found particularly interesting involved the technologists' beliefs and their views on appropriate values. For example, all of them believe in "doing the right thing" by their workers, clients and the wider community (imposing and monitoring good safety measures; not passing on client lists). Plagiarism was definitely on the prohibited list, as were outcomes that were knowingly offensive from a cultural or religious perspective.

A growing appreciation of the value of using "green", sustainable materials and good waste management practices for the benefit of future generations was also evident (see Jonathan Symons and Brad Jowitt's responses in Folio 2 in particular). This is now considered by most technologists to be one of the social responsibilities of being a good corporate citizen.

While some of the responsibilities technologists have to the wider community are encompassed in legislation and formalised professional standards and Codes of Practice, it is clear that there is now a conviction and accountability on the part of most technologists operating successful businesses in today's world to voluntarily take on these professional responsibilities for the common good.

3.6 EXPLAIN KNOWLEDGE THAT UNDERPINS A MATERIALS TECHNOLOGY OUTCOME (Refer also to Folio 2)

I consulted with four technologists about the technological knowledge they have accumulated and how they use it in their practices, particularly in relation to designing and producing outcomes for their stakeholders.

By carrying out interviews with these technologists during the Term 2 holidays I was able to assess their responses to assist me in my own practice. The Tables of Questions and Responses from each technologist on how they use knowledge to underpin their own technology outcomes can be found in Folio 2, together with a synthesis of these views. In addition to the "Responsibilities" questions covered under Assessment Standard 3.4, these Questions covered the following areas:

- People and Contacts;
- Time Management;
- Budget;
- Materials/Components;
- Techniques; and
- Sustainability

It should be mentioned that I had already met informally with both Simon Coughlan and Jonathan Symons very early in my design development process, and well before these formal interviews took place, because these technologists both work within the field of furniture making, and I believed their knowledge would benefit both me and my stakeholder as I investigated different design options.

During the course of the development of my own outcome in Term 3 I continued to communicate with all four technologists, but particularly these two, to inform my own practice and get feedback on my specific design and construction processes and techniques. For example, I discussed with Simon Coughlan from Rose & Heather the types of joints they used for the kauri cabinets they produce and sell.

As noted in my report in Folio 2, the responses from these technologists were remarkably similar in most respects. They all bring together and use knowledge accumulated over many years relating to key resources, techniques, procedures and experiences. Capabilities from both related fields and other disciplines are used as required in order to develop and produce their technological outcomes successfully (for example, Grant Williams always uses engineers to construct the mechanical aspects of his sculptures and Brad Jowitz refers to Quantity Surveyors for accurate material measurements used for their costings).

All of these technologists displayed a strong work ethic and concern for the wider community, including their employees, suppliers, clients and other technologists. I was able to use their vast knowledge and different ideas and experiences to benefit my own practice (for example, Rose & Heather influenced my views on the benefits of adopting a simple, classical design). I also learnt a lot more about the design and production process by having access to a wide variety of knowledge from other disciplines.

I am indebted to these technologists and the professionals at my school for the knowledge they have imparted to me to assist in the development of my own practice.