No part of the candidate's evidence in this exemplar material may be presented in an external assessment for the purpose of gaining an NZQA qualification or award.



## Level 2 Technology 2024

91358 Demonstrate understanding of how technological modelling supports risk management

# **EXEMPLAR**

Excellence

TOTAL <mark>08</mark>

This report will entail how I employed technological modelling to create a final design and construct an outfit. Technological modelling is divided into two categories. These categories are functional modelling and prototyping. Functional modelling involves all the initial testing that takes place and the development of ideas that are involved in creating the final design. These can include drawings, ongoing research, sampling, toiles, fittings, adaptations and refitting with those changes added. All these steps ensure that the final design is functional and able to be made.

Prototyping involves the final construction of garments along with testing the garments in their respective social and physical environments to ensure and determine their suitability. Prototyping can look different depending on who is using the process. For a student, prototyping is the final, finished design along with certain suggestions for changes and improvements, whereas prototyping within the fashion industry involves their final sample, which is tested and from this, if it is approved as suitable it will be mass produced. Technological modelling can help with risk management throughout this report as the two categories of functional modelling and prototyping within technological modelling help to eliminate risks as designs are very thoroughly developed and researched.

#### BRIEF

The Hokonui Fashion Design Awards are about to enter their 36th Year of competition. This is the longest running fashion design awards of their type in New Zealand. This competition is held in Gore, Southland in late July and attracts entries throughout the country. This year there are four school sections, and I can enter one of them (natural fibres, glamour, streetwear or upcycled). Design and create a runway outfit to be entered into the Hokonui Fashion Awards. My final outfit must:

1. Be entered into either natural fibres or upcycled category

- 2. Relate to my chosen theme natural fibres or upcycled category
- 3. Be original, creative, unique and have a wow factor
- 4. Be durable enough to transport to Gore and have quick changes backstage and withstand the catwalk
- 5. Be finished and sent in the post by Friday 21st June 1pm (term 2 week 8)
- 6. Use suitable equipment available in the classroom or specialist resources by approval
- 7. Meet the judging criteria (how well they meet the brief of the section you entered, the cut, finish, innovation and originality)
- 8. Fit my body measurements as well as being a size 12 for the competition
- 9. A range of technical construction skills
- 10. Fabric/s that are suitable for the style of outfit and the catwalk
- 11. Stay within the budget of \$200

#### **IDENTIFYING RISKS**

Identified Risk	Туре	Severity	Probability
Fitting the model and myself	Functional/aesthetic risk	High severity	Likely chance of recurring

severity potential impact and a likely chance of recurring. This is because one of

the specifications my final outfit must meet is that it must fit my body measurements as well as being a size 10 or 12 for the competition models. Although I am usually a size 8/10, my hip and bust measurements are not typically 'proportional' in comparison to my waist and shoulders. Due to this, I think this functional risk has the potential to impact the way my final garment looks on the model in competition as it is incredibly unlikely that they have a model that has the exact same measurements as me and is therefore likely in probability to occur. If the model does not fit the garment correctly, then it is likely to look aesthetically different as it won't 'present' the same.

Transportation Functional risk	High severity	Not likely chance of recurring
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Potential Impact: The identified risk of transportation had a high severity potential impact, and it wasn't likely to reoccur. One of the specifications that my final outfit must meet is that it must be durable enough to transport to Gore and have quick changes backstage and withstand the catwalk. Additionally, I will have to be able to fit it inside a small box or bag, so it doesn't cost too much to transport to Gore, so when designing my final design, I had to keep in mind the size of my garment that I was thinking of making. This technical risk means if I don't make a final garment that is durable enough to withstand transport to Gore or make the garment out of durable materials, it could be damaged in transit.

	Timeframe	Technical risk	- ··	High chance of recurring
- 1				

Potential Impact: The identified risk of timeframe has a high severity potential impact. One of the specifications my final outfit must meet is that my final garment must be finished and sent in the post by Friday 21st June 1pm. This means that I have a strict time frame that I must comply with, or the consequences will be that my garment does not get transported down to the competition in time and my entry is not accepted. If my design was too complicated or detailed, it might have also taken too much time to make. Due to this, when designing I had to keep this in mind and be very time conscious of how detailed and complicated my design could be, so I didn't run out of time and send my garment after the deadline.

and a second second second second by a second	Going over budget	Economical risk	Medium severity	High chance of recurring
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Potential Impact: The identified economic risk of cost has a medium severity potential impact. One of the specifications that my final outfit must meet is that it had to be made within the budget of \$200. If I made my final garment without this in mind, I could go over budget and it is easy to spend lots of money on expensive materials for the garment especially since at this point, I was considering entering the natural fibres category of the competition. Natural materials tend to cost more due to their composition, so for me to eliminate this risk I had to do extensive research into materials and find the best costs for the materials I wanted to use as well as look out for sales to save as much money as I could to ensure the cost of my final garment was as low as possible. I have classified this as a medium risk because it won't affect the final garment itself, however it will still have an effect as it means the garment will cost more than it was supposed to.

#### **CONCEPT DRAWINGS**

Concept drawings are functional modelling in the form of a flat 2D drawing. The purpose of concept drawings for this assignment is to visually see my ideas on paper as opposed to in my mind. The concept drawings were testing my initial ideas based on research I had carried out and served as a way for my ideas to be visually developed so that I could see my ideas as well as other people being able to visually see my ideas. The concept design drawings test colours, proportions, shapes and other aspects including the visual aesthetics. This helped with risk management as being able to visualise my ideas and see them on paper brought to reality any potential risks and flaws in the design that may cause issues later in the design and construction process. From this point, these potential risks and flaws can be fixed, and the design can be further improved and developed.



The first risk I identified from my concept drawings was my fabric weight compatibility. This is a very high severity; technical risk and it has an unlikely chance of recurring. The reasoning behind this is because on my first concept design drawing, the lower half of it features two different types of fabrics - one darker pink opaque fabric that ideally has a fabric composition of either cotton or linen and the other fabric is a light pink sheer fabric that ideally is made of silk. After my teacher saw this design, she immediately raised her concerns about the weights of the two different fabrics and whether they were compatible. She explained to me that the sheer fabric would not be strong enough to hold a heavier weight opaque fabric and could potentially rip the silk.

Following this stakeholder feedback, I carried out some research of my own into the fabric weights of linen, cotton, and silk. During this, I discovered that the feedback from my stakeholder was right as my findings from my research revealed that the average fabric weight of 100% silk is around 40-80gsm while the average fabric weight of midweight linen is around 200gsm. After further conversations with my stakeholder. I determined that I would not be able to include this feature in my design as it simply would not work whilst using fabrics with natural compositions, and therefore this risk has been eliminated. If I were to use synthetic fabrics it could work as I could potentially have used mesh as the sheer fabric, however, then I would not be able to enter the natural fibres category of the competition. I know that my stakeholder feedback was reliable and valid because she has worked with a lot of fabric textures before. My teacher also knows the brief and all the specifications that my design must meet. Now, this design would be more appropriate and suitable for the social and physical environments as this risk would have been eliminated as there is no further chance of it coming up again during the design process or in the competition. This means that the shape of the garment won't be affected and therefore if this design were to go on the catwalk at the competition, it would be more suitable with this risk eliminated.

The second risk I identified from my concept drawings was the risk of fitting the model and myself. This is a high severity functional/aesthetic risk, and it has a likely chance of reoccurring. The reasoning behind this is because on my first concept

drawing, the corset top has a sweetheart neckline with cups that feature boning. For feedback my teacher mentioned to me that having this feature on my design could potentially be a risk as the model wearing my finished garment at the competition would be unlikely to fit it. The specifications of my final outfit require me to create an outfit that must fit my own body measurements as being a size 10 or 12 for the competition models. I am usually a size 8/10, although my bust measurements are larger than a typical size 8-10. Due to this, the model may not fit into the cups, and they could gape - making the outfit unfit for the social environment of the competition as well as looking aesthetically different. After this risk had been identified to me, I decided that to reduce this risk, I should consider changing the neckline and cups slightly to make it more likely to fit the competition model as well as myself. I could change the neckline to either a plain straight neckline or reduce the volume of the peaks on the sweetheart neckline. Because I don't know the competition model's measurements, by making the design more accommodating for varying measurements, it is more suitable for the social and physical environments. I know that my stakeholder feedback was reliable and valid because my stakeholder was my teacher. My teacher has been to the Hokonui Fashion Design Awards in previous years, and from being in the physical and social environment, she has seen ill-fitting tops and garments and therefore knows the negative impact that has the potential to affect the way my garment is seen by the audience and judges alike. In her experience, these garments draw attention away from the garment itself and draws more attention to the model and the model's body. The likelihood of the final garment fitting the bust correctly on the catwalk is increased.

#### DEVELOPMENT DRAWING

Development drawings are functional modelling in the form of 2D drawings. The purpose of development drawings is to refine my ideas further and further develop my design. They test the detailing of my design whilst looking into the more technical aspects of how the design would be constructed, the aesthetics of it, and the functionality of the design. These drawings help with risk management as being able to visually see my refined ideas on paper encourages me to look deeper into my design and 'pick out' functional issues and risks.



The first risk I identified from my development drawing was that I had drawn a flat 2D design and had not realised that the peplum was 3D. This is a high severity; technical risk and it has a low chance of recurring. On my first development drawing my ideas worked on paper, however, when I showed my stakeholder (my dad) this development drawing, he pointed out to me that although my ideas worked on a flat 2D piece of paper, if I tried to visualise how it would look like a 3D drawing, it would not work. This is regarding the arch-like shapes on the peplum of my design. These arches are very two dimensional and do not account for the sides of the skirt that aren't visible, only the front and back are accounted for. When my dad pointed this out to me, we tried to come up with a solution for this risk, however the only other solution was to change the arches into vertical lines of boning. In the process of attempting to find a solution,

we took a bowl and turned it upside down to replicate the 3D semicircle shape of the

peplum. We then drew lines on the bowl with a whiteboard marker to try and figure out the logistics of any possible solution that we may have been able to come up with. This decision that was made to eliminate this risk can be seen in development drawing two.

My stakeholder feedback was reliable and valid because my stakeholder was my dad. My dad has been kept up to date with what my assignment is and he has had a consistent interest in what I am doing and where I am up to. He had looked through my research, drawings and testing and therefore knew what I was trying to achieve and the purpose I was trying to achieve it for. Not only this, but he was professionally equipped to deal with this specific risk of my development drawing being a flat 2D design as he has a diploma in architectural design. A huge component of architectural design is taking 2D drawings and ensuring that they can be translated into 3D. I don't think anything could still happen with this risk as it has been eliminated due to the change in design more suited to the social and physical environments as it means the design 'flows' better and is more aesthetically pleasing.

The second risk I identified was the boning in the corset may not be very effective or functional. This is a high severity, technical and functional risk as it has a very low chance of recurring. On my first development drawing, I wanted to accentuate the waist as much as possible, so I thought that by creating very extreme boning in the corset top, the waist would be snatched inwards. However, after discussing this feature with my class peers, they suggested that I take a more 'relaxed' approach to the corset boning. I concluded that regular boning would be more effective in terms of getting the intended shape of the corset as well as aesthetically looking more pleasing due to the corset and the peplum seamlessly joining together - creating a 'continuous flow.' I completed some ongoing research into boning inside corsets and completed a second drawing. Another part of my research was physically trying on a corset that my teacher had made when she was at university. This corset had 'typical' straight boning in it, and after physically trying it on, I could see for myself that it was possible to get my desired effect with straight boning as well as looking more aesthetically pleasing.

My stakeholder feedback was reliable and valid because my stakeholders were my class peers. My class peers have been doing the exact same assignment as me, and therefore are aware of the brief and all the specifications that my final design must meet. I used this type of stakeholder group as I trust their opinions and they have been through the process of the assignment with me. I don't think anything could still happen with this risk as it has been eliminated. This design should now be more suitable for the social and physical environments as it means the design will be more effective in terms of flattering the model's figure better and looking more aesthetically pleasing in terms of the way the design would have looked on the catwalk. Although, this design could still be slightly difficult to get on and off backstage. Because the corset would be tight, it may take slightly more time to put on, however, the design would allow for this.

The third risk I identified was there no visible way to get in and out of the garment. This is a high severity, functional and technical risk that has a low chance of recurring. I noticed this after a class discussion with my teacher and class peers when it was brought to my attention that there was no visible way to get in and out of the garment. Following this feedback from these stakeholders, I did some research into how corset tops usually function, and I decided that I would include lace and eyelets on the back of the corset.



This change is visible on my second development drawing. I know that my stakeholder feedback was reliable and valid because one of my stakeholders was my teacher and my class peers. My teacher has previously made a specialised corset using traditional techniques. Several of my class peers have also been designing corsets. When trying on the initial toile, my peers and teacher were helping me to pin up the back of the toile corset, we collectively came to the realisation that I would not get my desired effect from a zip, and therefore it was not an option for me to use. However, to get my desired effect and still be able to withstand quick changes and eliminate the time risk that the quick changes pose, I looked at a corset that my teacher had made whilst

she was at university to help me draw inspiration for a solution. After trying it on myself, I saw that the eyelets on this corset and the way it was threaded up which had the option <sup>3</sup>/<sub>4</sub> of the way down to be able to pull the cord even tighter and more efficiently. This really stuck out to me, as well as using a longer drawstring and having it pre-loosened so it is easier for the model to slip over her head. I used these stakeholder groups as I trust their opinions and they have been through the process of the assignment with me so therefore they are qualified to give me reliable and valid feedback, and without these stakeholders I would not have been able to draw inspiration from them and come up with clever solutions that minimise any risks that are posed. This design should now be much more suitable for the physical and social environments as the design is now functional and can be put on and off efficiently.

#### **TOILE OF DEVELOPMENT DRAWING**

Toiling is functional modelling in the form of 3D modelling of which fits onto a form where you can see all 360° of the body. The purpose of toiling for this assignment is to see how the garment and design are going to fit on the body. This can include skirt lengths, where seams sit on the body or if measurements need to be altered to get the most flattering final garment. For me, toiling was specifically testing the fit of my garment so I could make any necessary changes and refine my design to make the best possible final garment.

From the initial toiling of the corset, I tried on the corset top and identified the risk of my corset made from the original pattern not matching my development drawing. This was a medium severity, technical and aesthetic risk of which has low chance of reoccurring until the pattern has been fully adapted, fined and fitted. Because this corset was made from a pattern, it didn't exactly match my development drawing. To fix this, I went and talked to my teacher. The feedback she gave me was to try the corset top on inside out, and with a pen, draw out where I would like the bottom seam to go. I drew a new line from the hips to a sharp point in the middle at the bottom of the corset. My teacher could visually see the curves of my body from her own perspective, meaning that she was able to also check that the proportion of the

horizontal line, so it didn't affect the shape of my body or the physical appearance and aesthetic of the garment. I don't think that anything could still happen with this risk, however, if something were to come up it could potentially be because the new line was drawn by freehand, however once it was off the body, I used a ruler to make sure it was accurate and symmetrical on both sides. This design is now more suitable for my physical and social environments as it matches my second development drawing better as well as the other aspects of the garment.



The second risk I identified from this was that the boning in the bottom of the peplum did not meet. This was a high severity, technical/aesthetic risk which has a high chance of recurring. The reason this is a technical/aesthetic risk is that it is a technical aspect of the design that is aesthetically impacted as it can change the way the garment looks and is presented. This functional modelling was very important as this risk would not have been



identified without it. Taking a 2D drawing and transforming it into a 3d model identified this risk, which also meant I was able to eliminate it. If this risk is not fixed, then the shape of the garment will be impacted. After discussing this risk with my class peers and teacher, we came up with a few solutions. The first solution was to sew up the back of the peplum fully so that it would be a continuous 'dome'. After doing some research on this option and placing pins on the toile, I concluded that this option would not work because then a functional risk would arise as the garment would not be

able to be put on and taken off. The other option was to sew only the bottom of the peplum where the two ends of the boning join. After doing some research into this and pinning the peplum of the toile, I concluded that this option was the best and it would be a good solution to reducing this risk.

My stakeholder feedback was reliable and valid because my teacher has made corsets throughout the course of her career, and many garments that have employed the use of boning. Therefore, she is very well versed in knowledge about boning, so I completely trusted her opinions and advice she shared with me. My class peers have been doing the exact same assignment as me, and therefore are aware of the brief and all the specifications that my final design must meet. Both my teacher and my class peers could physically see the way the boning at the bottom of the peplum sat as well as how it hung off my body, and through directly comparing it with images of my development drawings, discussions were had between myself and the stakeholders to come up with a solution to eliminate the risk. I think the only thing that could happen with this risk now is that because the bottom of the boning is sewn together, the back could potentially cave inwards. This design should now be more suitable for the physical and social environments as the shape and aesthetics of the garment should in theory look better on the catwalk. However, there is a chance that the shape could still collapse on the catwalk as the chance of this risk reoccurring is high. This will be checked during final construction.

#### SAMPLING/TESTING/FABRICS



Sampling is functional modelling in the form of construction techniques. The purpose of sampling is to try out a certain technique to determine whether it is suitable for your garment/design and to practice the technique. Sampling helps with risk management as practising the techniques through sampling can help identify risks and figure out a way to eliminate those risks, so they don't impact the final garment.

This first calico sample is how the bottom of the peplum could potentially look like. The risk that I identified from this sample was that the edge of this sample where the bias binding is sewn to has frayed. This is a technical/aesthetic risk that is high severity and has a low probability of it reoccurring. The stakeholder group I used was my teacher as after sharing this concern with her, she suggested to me that I find bias binding that has a larger width so that I can fold it over the edge and edgestitch it on to hide the frayed edge and reduce the risk.

After completing some further research, I found a wider bias binding that I would be able to use for my final garment. I know that my stakeholder feedback was reliable and valid because when I sewed this sample and tried on the toile of my development drawing, my teacher could see the way the edge of the fabric was fraying and how it negatively impacted the visual aesthetics of the garment. Having a second opinion and perspective was incredibly helpful as it meant I could gain further insight into how I would go about eliminating the risk. I don't think anything further could happen with this risk as it has been eliminated, but however, in the process of sewing on the bias binding over the edge, I had to be extremely careful as to not miss the edge of the bias binding when edge stitching as that would have created a hole. If this happened, another technical risk would have been created. This is now more suitable for the social and physical environments as the final garment won't fray on the catwalk, or in the process of transportation down to Gore. By eliminating this risk, the final garment will look much more aesthetically pleasing and be much neater/tidier and will no longer be a technical/aesthetic risk.



This second calico sample is practicing lining up and sewing a seam so that two pieces of bias binding can blend seamlessly with each other and be lined up correctly. This is a very important sample as this kind of 'junction' occurs frequently in my design where the corset meets the peplum. The risk identified from this sample is an aesthetic, high severity risk that has a likely probability of recurring. The reason that this is an aesthetic risk is because if the seams aren't lined up perfectly, it will be very visible as my development drawings use hot pink bias binding that is contrasted with a light pink fabric. If the bias binding is off centre by 2mm or more then it would be obvious to the eye and therefore

my garment would be negatively aesthetically impacted. After discussing my concerns about this risk with my stakeholders of whom were my class peers, they suggested that when sewing this on my final garment, I take extra time, care, and caution. One of the ways for me to do that was to pin every single seam where one piece of bias binding was meeting another and after pinning, check that every junction between the seams was lined up perfectly. By following this stakeholder feedback, the risk was greatly reduced as precautions such as pinning had been put in place. However, the risk had not been fully eliminated. This is because it is still possible for the fabric to move slightly beneath the pins, however if I am careful enough, I think I would be able to manage that slight risk.

My stakeholder feedback was reliable and valid because my stakeholders were my class peers. Two of my class peers had been to the Hokonui Fashion Design Awards in 2023, and therefore had an audience members perspective on the garments when they were shown on the catwalk. Their insight was incredibly helpful as they were able to explain to me the significance of a garment not being made with seams and bias binding that have been accurately sewn into place, and the negative aesthetic impact it had on the audience and judges alike. Not only this, but my class peers have been doing the exact same assignment as me, and therefore are aware of the brief and all the specifications that my final design must meet. This should now be more suitable for the social and physical environments as it helps the aesthetics of the final garment if the seams are lined up correctly the garment will look like it is better constructed, and the garment will look better on the catwalk.

#### FINAL DESIGN and SPECIFICATION OF TECHNIQUES

Final design is a 2D drawing/model of prototyping. The final design is the first stage of prototyping. The purpose of the final design is to see your fully refined ideas in a 2D design that theoretically should be able to be taken into 3D. The final design should have gone through lots of testing, ongoing research, feedback and drawings to have the best possible design and have eliminated and reduced risks as much as possible. The final design helps with testing competing and contesting factors as it should eliminate all those factors, refine all my ideas as well as make informed decisions to eliminate/reduce risks and get to the final design with any technical issues resolved. These technical issues should have been resolved through toiling such as fit, construction or proportion issues.



One issue/risk that was resolved from my second development drawing to my final design was the hot pink ribbon that lines the top of the corset and the bottom of the peplum. A wider ribbon is put over the two edges and edge stitched on. This risk was identified during the sampling/testing/fabrics and is being put into use for the final design. The reasoning for this is to stop fraying of edges and give the corset a neat and put together look.

#### **CONSTRUCTION OF GARMENTS**

Construction of garments uses prototyping to construct the final garments in their respective social and physical environments to ensure and determine their suitability. It helps with risk management as this type of prototyping is in 3D, so risks are more obvious to see, and therefore easier to manage.

During construction, a high severity, aesthetic and technical risk that I came across was sewing the layer of silk onto the lining of the underskirt that had a high chance of

recurring. The reason this was an issue was because to sew on the silk layer, I had to leave an opening in the lining of the skirt, however, I couldn't fully sew the silk all the way up the split. I went to my stakeholder who was another teacher at my school. She suggested to me that I would have to sew up the hole in my lining as I was finished with it, and I would have to hand sew the top of the split. The reason I had to hand sew it was because there was no other opening in the skirt that could reach the top of the split, the silk would have torn if I used a sewing machine due to its extremely fragile nature, and the seam would have been visible and not look aesthetically pleasing. I know the feedback I received from my stakeholder was reliable and valid because this stakeholder has a wealth of knowledge for fashion and sewing as she regularly takes sewing classes and is always constructing and designing garments of her own. She has also been following this assignment from the beginning as she works closely with the fashion department of the school and therefore is qualified to give me reliable and valid feedback. This garment should now be more suitable for the social and physical environments as the silk was sewn on properly and did not rip. If I had not reduced this risk, the silk could have been ripped due to its very delicate and sheer nature.

This final fit of the prototype consists of a corset top connected to a peplum, along with a long skirt which is worn underneath. The underskirt is made of light pink linen, with a longer layer of sheer silk laid over top. The corset top has panels of hot pink ribbon going vertically down, with boning inserted. These panels of ribbon continue down onto the peplum skirt, following the dramatic shape and silhouette of the garment. The corset top is very fitted as its purpose is to enhance the model's waist, and the underskirt is also relatively fitted as it hugs the hips and then hangs off them towards the ground. This is appropriate for the physical and social environments as it is catwalk appropriate, and it wouldn't offend the judges or audience. It wouldn't expose the model and make her feel uncomfortable as the skirt is long, so the audience sitting below the raised catwalk wouldn't be able to see up the skirt. The split in the skirt doesn't go up high enough so the audience still wouldn't be able to see up. The outfit is also suitable for the physical and social environments as it is suitable for backstage. Its functional elements allow for it to be durable for the models

to wear and do quick changes. This design also made an impact on the catwalk as the contrasting colours of light pink and hot pink are an immediate 'wow' factor and attention from the audience was drawn naturally. Once the initial impact of this outfit had been captivated, the audience noticed smaller details in the design.

By using these two areas of technological modelling, I was able to get the best possible final design. Functional modelling allowed me to develop and refine my ideas to get to the stage of creating my final garment. It helped me to reduce and eliminate any risks I came across throughout this assignment. Prototyping ensured that the best prototype of my intended outfit was produced by testing the garments in their respective social and physical environments to determine their suitability. Together, functional modelling and prototyping were able to help manage, reduce, and eliminate risks as designs are very well researched, refined and developed.



### Excellence

Subject: Technology

**Standard:** 91358

#### Total score: 08

Q	Grade score	Marker commentary
One	E8	The candidate uses a range of modelling processes that are typical for a textiles project. These being research, sketching, pattern making, toiles, fabric testing, and prototyping. At the beginning of the report they establish several relevant and considered risks, which are well explained. Throughout the report they also refer to these risks. They refer to stakeholder feedback throughout, identifying who is giving the feedback and providing examples of what feedback was given. They also, throughout the report, validate the stakeholders' feedback.