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Introduction to External AS 91358 Risk Management:

The Risk Management assignment is a summary of the risks that I had encountered through whole process of making a Brief Development, and then finally turning that concept into a reality through the Prototype Development. What had seemed like a straightforward path was, much to my surprise, one that uncovered numerous risks, which required a great deal of analysis. These risks were uncovered throughout the process of Technological Modelling, and by analysing the probability and severity of them; I was able to reduce the likelihood of my final product having them and gave me more confidence that it would be fit for purpose.

The purpose of my product was to help the student see the importance of their internals, before they stress about it and start procrastinating. I derived the purpose of my product from my personal and other student experiences of time management problems due to procrastination. Image 1 shows the first screen of my app where it asks the user (target audience being NCEA students) questions about their upcoming internal, and the user answers those questions using the side buttons and then the done button to submit. After submitting, the second page, as shown on image 2, contains loading bar graphs which show the progress that they student has made towards their internal, the

time they have had to do the internal, the difficulty of the internal, and how much work they have to do to complete the internal. These bar graphs are information that the student already knows, but puts it in a way for them to visualise (also with the help of the emojis and the funny images at the bottom of image 2) the reality of the student's efforts for their upcoming NCEA internal. The information that they may already know is visualised so that the student can manage their time to fulfil their goals accordingly, and will make it difficult for them to "shrug off" the fact that they may have not done enough work required for their goal to complete their internal to their 100% capabilities. Images 1 and 2 are the first and last screens that are displayed on my app on a Corona SDK simulator, which was the program I used to make the app. The app has multiple scenarios depending on the answers you give out of the options for each question asked on the first screen.

Technological Modelling consists of Functional Modelling and Prototyping. Functional modelling is discussing and thinking about the ideas or concepts that you could use in your product. This allows the designer to reason logically why could or why they should not add a feature into their product. It is not ideal in Functional Modelling to make a decision to do something towards you product, without testing the idea through prototyping. Functional modelling usually occurs at the early stages of Risk Management and includes thinking through ideas, discussing with stakeholders, deriving opinions from wider stakeholders, or sketches of your plans.

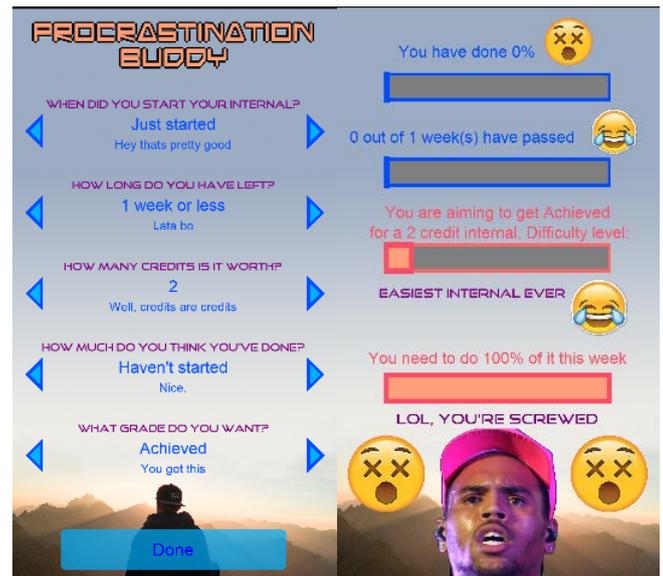


Image 1

Image 2

Prototyping on the other hand is actually testing an idea to evaluate how it may or not be fit for purpose by trailing it through proper resources. It is to see if an idea is appropriate or acceptable in the social and physical environments. It is also used to see if it has any consequences on your material such as time, money or resources. Both functional modelling and prototyping are to manage risk by reducing the probability of any malfunctions or losses, or to increase the level of success of the technological outcomes.

Context Research:

Technological Modelling: Functional Modelling - Existing solutions, where did I research, why was it reliable, why was it valid

Why research existing solutions: I used functional modelling through the research of existing solutions at the start of my Risk Management process. This was functional modelling as it was used to understand the genres my product would fit under, and to give me an idea of how my product can fulfil its purpose by looking at how other products have tackled the problem of procrastination. I looked at games, quizzes and apps that had the similar purpose of limiting procrastination. Researching existing solutions is functional modelling as I am looking at ideas that I could put in my product.

Reliability and Validity of research: I could trust the results as I did not only look at concepts and generalisations of apps in the play stores, I tested them myself to verify what I read. I was also able to see factors that could lead towards an app being popular or not. Popularity of an app was easily discovered as you can see the number of downloads on the app store. This meant that any judgements that I made towards an app was reliable however may not be valid as I was not always sure of the purpose of the apps, and therefore what the creators of the app define as success.

Risks: Risks identified through Technological Modelling

Failure to sell product: Too boring: I looked at the app store for my functional modelling as from there I could see the success and popularity of existing solutions (apps). After downloading and testing a few apps with the goal to limit procrastination, I found that they generally did not have much focus on design elements and as a result did not look appealing which could be a cause of their lack of significant downloads. This can be seen even in image 3 in “Yelling Mom”, an app on the Apple App Store, which I felt looked boring due to lack of focus on design element focus. It has a significant amount of downloads with slightly greater than 5000 downloads, however is quite small compared to the amount of students in the world that have problems with procrastination, and especially considering that it was one of the best that I could find. The risk of my product not looking appealing is not very probable because if a student really wants to limit their procrastination then they should overlook design elements and look more towards



Image 3

whether or not the product benefits them. However, it is severe, as some students do look at the professionalism of a product, and if it does not look appealing to them then they may stop using the product resulting in my failure to sell the product.

Risks: How did Technological Modelling reduce risk?

Functional Modelling through research of existing solutions reduced risks as I was able to see that some apps were unpopular because they did not look appealing, or they asked too much from the user who can simply say no to demands from apps they can delete. I also found that the most popular apps were the ones that focused on design elements and were interactive, but were forms of distractions that only attributed to the user's procrastination. Therefore, for my product, I had to make something that had a balance to be appealing, yet still fulfil the purpose of limiting procrastination. This balance means that I would focus more on how to appeal an audience as the risk and severity of being too boring was significant in comparison to the risk of my app not fulfilling its purpose.

Changes that could be done: Found through functional modelling:

Make it interactive: I found that the most engaging apps for me were the ones that the user actually had a part. So rather than making a product where the user simply has to read things to inform them and hope that they can find what they need, I could put buttons or a set of options where the student puts in their problems in which my product suggests solutions specifically for them. Another form of making it interactive was found in some indie games where they used informal language to intrigue the teenage audience. I could use informal language to interact with the users in a way that they are more comfortable understanding. This is to reduce the risk of failure to sell the product by being too boring. This was found through functional modelling, as I saw that the most popular apps were interactive, in my research of existing solutions.

Changes that should be done: Found through functional modelling:

Make an app: Through my research of existing solutions I could not find many websites that tackle the problem of procrastination. All I could find were articles which as explained earlier, is not favourable as I found that the most engaging products were the ones that were interactive, in which the user actually had a part to play in. Also websites take up too much time to use as they are not as accessible as smartphones. This time that the website uses up only contributes to the procrastination of the student as they are spending more time on trying to tackle their problems rather than actually doing their work. This is also to reduce the risk of failure to sell the product by being too boring.

Social and Physical Context Research:

Technological modelling: Functional Modelling – Interviews, who did I ask, why were they reliable, why were their responses valid:

Why interview: Interviewing was functional modelling as I could get an idea of what students felt towards their internals and what areas they struggled on so that I could get an idea on how to tackle the challenge of maximising their efforts towards study,

and limiting their procrastination. This is functional modelling as it is only discussing and evaluating ideas of what I could include in my product.

Reliability of interviewees: For functional modelling of my social context research, I had looked at my representations of my target audience being teenagers doing NCEA. I interviewed classmates from my school () and other friends outside of my school () to focus on my social environment that my app would be used in. I also made sure that they were of different levels of NCEA and I believed that different genders had different views on their views of study. This wide range of NCEA students were my main stakeholders as they all had slightly different perspectives to one another, but had the same goal of preventing procrastination.

Validity of responses: My stakeholders gave me proper feedback as they know that procrastination is a genuine issue for them that they would like to fix. They were happy to share with me their struggles to reach their maximum capabilities due to their numerous distractions and commitments they have outside of their study.

Technological Modelling: Functional Modelling – Survey, who did I ask, why were they reliable, and why were their responses valid

Why survey: Surveying was functional modelling as I sent out a google survey to all DTS students in my school doing NCEA in order to gain generic information of what environments students would usually think about their internals and therefore when could my product could aid them.

Reliability of interviewees: I can trust the results from the survey as it included a mix of year groups (years 11 to 13) providing a range of students that do not know me and could not have any significant bias towards it. These DTS students from years 11 to 13 were also appropriate to ask as they could possibly have a more broad knowledge of modern day technology and the preferred environments of physical contexts than regular students.

Validity of responses: The survey was short and simple consisting of 3 questions and a text box where they suggested why their preferred device would help them to limit procrastination or to fit into the physical context, so I do not think there was any risk of rushed or invalid feedback.

Risks: Risks identified through Technological Modelling

Failure to sell product: Too much pressure: If the product puts too much pressure on the student through forcing them to do more work than is needed for their goal, then they may feel the app is unnecessary to use and as a result not use the app. I found this risk after my functional modelling of interviewing where many of my interviewees helped me understand that students seem to tolerate many stresses in their lives, and it is up to them if they can handle any further pressure because ultimately they decide whether they want to use the product. Therefore, the probability of this risk is high. The severity of this risk is very high as they may not use the app and therefore my app would not fulfil its purpose.

Failure to work in preferred physical environment: In my functional modelling through the survey, I found that students generally wanted something quick and easy to use, and were much in favour of the usage of smartphone apps. This confirms my context research before. Attention spans of teenagers currently are shorter than ever. According to the highly acclaimed news agency in the UK, the Telegraph, studies show that attention spans of humans of decreased to around eight seconds thanks to smartphones. Things must be quick and easy to use in order for my audience. This is so that they don't feel the app is too long and boring, and as a result, stop using the app. If the app takes longer than a minute or two to use, then the user cannot really use it 'anywhere' as in some places or situations the user may not be able to invest such time into it. For example, if the user may want to use this app quickly in class so that it does not actually distract the user from his or her learning in class. The probability of this risk is moderate as there are simply some people who have lower attention spans than others have and as a result cannot be dedicated to trying to minimise their problem of procrastination through the app. The severity however is very high as they may not use the app and therefore my app would not fulfil its purpose.

Changes that could be done: Found through functional modelling or risks:

Limit the app size to two screens: As said before, things must be quick and easy to use in order for my audience to use without them feeling that it is too long and boring due to the risk that the user may not use the app. Having two screens is realistic and achievable as seen in my sketches where I am able to limit the wordings of my app and represent some through images, whilst still being able to fulfil my purpose of limiting procrastination. Reducing the time reduces the risk of too much pressure, as it reduces the content the user has to go through, and is not pressured by the app to demand many tasks. It also reduces the risk of the app being too long, by limiting the size of the app to only two screens. Narrowing the time it takes to use the app also limits procrastination as the user can have less time using my app, and more time doing their assignment.

Design Mock-up and Prototype trailing:

Technological modelling: Functional Modelling – Sketches and Prototyping – Functional testing

Why sketch? I used technological modelling through sketches of what I thought the app would look like, to give the stakeholders and I some ideas that I could put in my app, and to see if there were any risks in doing so. I felt confident that I had gained enough information of the context of the app, the social environment or audience that would use or be interested in the app (students doing NCEA), and the preferred physical environment of my audience (anywhere, anytime).

Validity of stakeholders for design mock-up and functional testing: After creating sketches of the app, I asked the opinions of my classmates. This is because as they are ones that seem to know about design elements best through the standards that we have done in DTS throughout the year. I had also asked students

outside of my school who take art or other design subjects as they may have a more comprehensive understanding or design elements than other students. Searching opinions from my stakeholders of my sketches is not a part of the technological process; it is a result of it.

Reliability of stakeholders for design mock-up and functional testing: At this stage of the Risk Management process, the people that I had asked seemed did not seem to respond as enthusiastically as before. This could be because they were fed up with responding so many times to me as my stakeholders. To get around some of them being slightly lazy, I gave the stakeholders ideas for them to choose from as they found it too hard to come up with ideas themselves. The responses they gave me then were valid as the students found it very easy to blatantly tell me whether or not they liked a characteristic, which meant that there was usually a general preference towards a characteristic of the product.

Reliability and validity of wider stakeholders for functional testing: For this, I had asked my DTS teachers, as perhaps they would have a more efficient or favourable way to display features on my app. I had asked my dean so that she could tell me generalisations of students and procrastination. I had also asked my tutor who was a former NCEA student and has experience to share with me on what factors affect the amount of effort towards a subject.

For testing the final product, I asked my main stakeholders to test the app in-situ so that they could give be blatant responses of the functionality of the app. They were also reliable as I had numerous stakeholder feedback in order for me to get general responses until they all believe that the app worked towards its full potential. I used functional testing for prototyping at this time so that I could test the functionality of the product. I needed to test the functionality of the product so that I could trust that the app works the way I want to whilst avoiding all other risks I have found through Technological Modelling. Functional testing is also used in order to see if the product works before it is added to the app store.

Risks: Risks identified through Technological Modelling

Failure to sell product: Unfavourable and contradicting characteristics:

Through previous technological modelling, I have looked at many concepts and things that I could do in order to avoid risk. A risk that I face now is that if I were to implement everything that I could do without thinking of the repercussions then it could backfire as some may not be favourable to the users or some ideas do not fit in with other ideas. I found this risk through sketches where I found that when I was trying to fulfil the characteristic of making it more intriguing by adding a border whilst also trying to reduce the size of the screen. When they were tested, I realised that these do not work well together and I would have to make a decision to do either one change or the other. This risk is not very probable because contradicting characteristics are not common, but it is severe, as my app should not have characteristics that disfavour each other as that does not give my app any benefits. Unfavourable characteristics can lead to a disliking of my app and can result in less users than desired. This risk is very probable and therefore is severe as if many people do not download my app due to the disliking of design, then my product can fail to sell.

Failure to work: Through prototyping by functional testing, I was able to find many flaws in my product and had realised that if there were any flaws in the functionality

of my product when released to the app store, then the app simply would not sell, as it does not achieve anything at all. The probability of this is quite low as I had done functional testing with the help of my classmates multiple times and persisted on issues until I had a working product. I was satisfied with my product when I felt there were no major functionality errors that could result the severe risk of the app not working.

Lawsuits: My app used images from the internet for the background and for the results. I had to make sure that all of the images that I used on my app. were labelled for non-commercial use and modification. The probability of being sued would not be very high, depending on the success of my app. If my app that gains success, the owners could sue me and say that I am gaining success for something that is not rightfully mine. This could be an economically costly mistake for me, making the severity of this risk very high.

Changes that could be done: Found through technological modelling or risks:

Moving background: Majority of my stakeholders believed that having a moving background was unnecessary and deterred attention away from the foreground, and therefore the purpose of the app. I had even backed up this suggestion by doing some research on it and I found that they were right, and that moving backgrounds were not found in apps other than games. This is because the background may be more important for games, and the user may have to pay attention to it such as enemies that they may have to avoid, to achieve their purpose of entertainment. This was an unfavourable characteristic that my stakeholders helped me see through the sketches, which I found had the of failing to sell my product.

Loading bars: Once again, in order to limit the size of my app, I must limit the content, meaning that I had express things in faster ways. So I found that graphs were a quick way to represent information. I found that loading bars were the most favourable as information could easily be recognised and also was the one that took up the least amount of area on the screen, unlike bigger graphs such as pie charts. This change was to reduce the risk of failure to sell product due to unfavourable characteristics, and was minimalised through functional modelling. Also it is to reduce the risk of failure to work in preferred environment, by making sure the app is not too long.

Result images: Also due to stakeholder suggestion, I found that showing images that represent results rather than text could be a way to prevent the app from being too long. After contextual research I found that not many apps do this apart from satire apps, which is a theme that I found that I did not have a problem with embracing. This satire theme is something that teenagers are attracted to, but many apps try to avoid due to their serious themes, which as a result causes them to be boring. This change was to reduce the risk of failure to sell product due to unfavourable characteristics, and was minimalised through functional modelling. Also it is to reduce the risk of failure to work in preferred environment, by making sure the app is not too long.

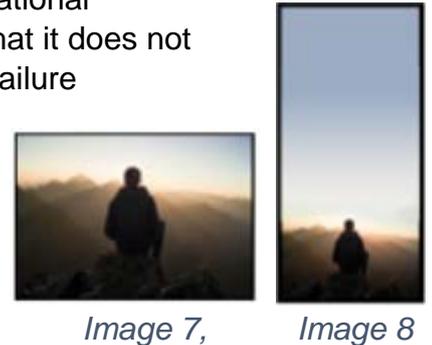
Changes that should be done: Found through prototyping or risks:



Background image: Because the idea of a moving background was ruled out, I now wanted a simple attractive background so that my app was not empty spaced. I also wanted my background to relate to the purpose of my app so I found images that were inspirational (image 4), pressuring (image 5), and motivational (image 6) to show to my stakeholders to find a general, preferred background image. Through my prototyping of functional testing, my stakeholders were able to decide on the inspirational

background as seen on image 6 as it was calm and simple so that it does not interfere with the foreground, and therefore reduced the risk of failure to sell the product through unfavourable characteristics.

Testing the functionality of the background on the Corona SDK simulator not only helped my stakeholders and I see the most favourable background, but to fix a problems found in fitting the screen. Originally, the inspirational image on image 6 was not vertically tall enough to fit on an app screen, so I modified the original inspirational image as seen on image 7 on Photoshop to make it tall enough as seen on image 8, reducing the risk of my app failing to work because I had tested the functionality of the background on the Corona simulator.



Buttons: I had to make sure that the right button shape and click were favourable on my app, and functioned. Due to technological modelling, I was able use the favourable buttons chosen from my stakeholders. The stakeholders had chosen triangles for the side buttons to select options as shown in image 9. Through

functional testing I found that Corona SDK did not have a widget to make a triangle button. Fortunately, a classmate had made his own code to make triangle buttons to click on and function that he allowed me to use. All my stakeholders preferred the rounded rectangle for the done button as shown on image 10 and all stakeholders agreed that the buttons should perform and action, on the release of the touch. Through prototyping through functional testing, I was able to reduce the risk of failure to sell product due to unfavourable characteristics or due to a failure to work. This was prototyping as I tested the functionality of the buttons multiple times to ensure it worked, and that the favourability according to my stakeholders was maximised (as seen in images 9 and 10) by showing it on the Corona SDK simulator, that was used to make my app.

Loading bars: There was already a widget for loading bar graphs on Corona SDK as seen on image 11, but my stakeholders all found that it was too skinny and unappealing. Therefore, I decided to make my own loading bar, which consisted of two rectangles, one which was the full length of the bar and the other on top which was the progress of the



Image 10



Image 11

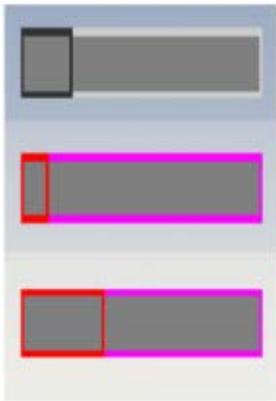


Image 12,



Image 13,

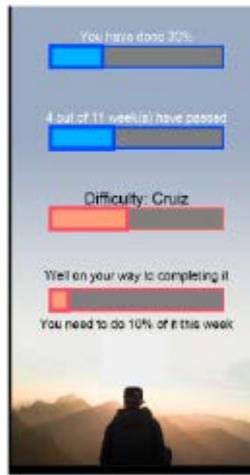


Image 14

loading bar. I was able to adjust colours, height and width accordingly as shown on image 12. The three bar graphs on image 11 (from top to bottom) are to show a work to chill ratio, showing how long a student can work, and how long they can chill, each hour of study that they have. Then my wider stakeholders being my dean and my tutor explained to me that a student has too many variables to

decide for each individual how long they should work in the top work to chill ratio on image 12. This is because some students work harder than others, and some students have other commitments and therefore cannot invest as much time as others. Therefore, I modified the second screen as shown on image 13 where I had added a difficulty bar graph and a work to do this week bar graph, so that students can realistically achieve the best of their abilities in their work. Image 13 was then modified even further to maximise favourability of my main stakeholders by changing the order of bars, and slightly changing the colours. Through prototyping through functional testing, I was able to reduce the risk of failure to sell product due to unfavourable characteristics or due to a failure to work. This was prototyping as I tested the functionality of the loading bars multiple times to ensure it worked, and that the favourability according to my stakeholders was maximised (as seen in image 14) by showing it on the Corona SDK simulator, that was used to make my app.

Colour: Colour of the app was very opinionated however, it was decided that the any components on the app should stay constant or similar with the themed colours of the background being white, blue and orange. I went through the long process of collecting my main stakeholder's preferred colours (image 15), and then bringing them all back together for them to compare and contrast about which they liked the best (as shown in image 15). I was able to reduce the

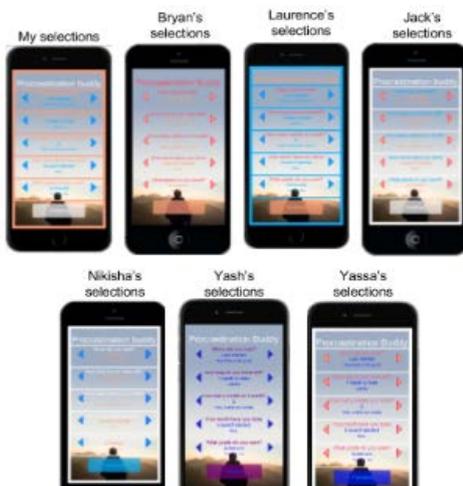


Image 15

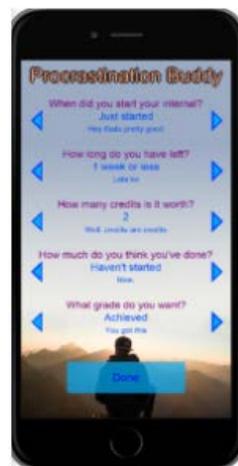


Image 16

risk of failure to sell product due to unfavourable characteristics or due to a failure to work. This was prototyping as I tested the functionality of the colours multiple times to ensure it worked, and that the favourability according to my stakeholders was maximised (as seen on image 15) by showing it on the Corona SDK simulator, that was used to make my app.

Images: Due to the lawsuit risk, I had to find images that were labelled for non-commercial use and modification. I found that they were ways to engage and relate to the audience without taking too much space on the screen. I used memes from popular culture that the teenage audience can relate to, and emoji's that represent the good or the bad of a characteristic of your current situation towards the users. I had to make sure that all the images were png's so that the images did not have separate backgrounds that doesn't fit in with the one on my app. I was able to reduce the risk of failure to sell product due to unfavourable characteristics or due to a failure to work. This was prototyping as I tested the functionality of the images multiple times to ensure it worked, and that the favourability according to my stakeholders was maximised by showing it on the Corona SDK simulator, that was used to make my app.

Conclusion

Through the Risk Management process, I have learned that I cannot just go ahead and create a product that I believe will complete a purpose. Technological Modelling is required and in some ways is something that we all may do without even thinking about it. Thinking about ideas and their consequences through functional modelling helped me to eliminate many ludicrous ideas, but at the same time, helped me have an open mind as to the different possible characteristics and therefore outcomes that I could have in order to achieve my purpose.

However, I have learned now that Technological Modelling is never complete without prototyping. Although some possible features have been eliminated during functional modelling, there were still many more to trail to see if they work, or to see if the work with each other. For example if some changes could include a border to make it stand out more, and another could be to reduce the size of the screen, when they are tested together I would realise that these do not work well together and I would have to make a decision to do either one change or the other.

I have also learned that prototyping rarely occurs only once. There is usually a more preferred way to do things and much of the time, and I found that when I was actually testing something, as it would be in the final product, I was much more critical and could find things that I had not worried about before.

I now have a deeper understanding of the Risk Management process that I had gone through and there were times that I had indeed considered risk through technological modelling without even realising. After evaluating the my process and looking at how I underwent technological modelling to identify, and limit risk, I find the process much more valuable as I now understand how I have increased the success of my product. The success of my product determined by how well it fulfils the purpose I sought after and popularity in order to help as many people as I can, and to profit the most out of it through advertisements when I put it on the app store.

Looking back at my process I believe that there were far more things that I could have done better if I was more aware of the Risk Management process as I am now. I believe I could have done more in order to justify whether or not I should include features in my app by doing more prototyping. However, I do believe that prototyping was done sufficiently in order to fully test the outcome of my product.

Exemplar of Excellence.

AS91358 – Demonstrate understanding of how technological modelling supports risk

management. Excellence Requirements

Demonstrating comprehensive understanding of how technological modelling supports risk management involves:

Discussing how different forms of modelling can provide valid and reliable evidence from different stakeholders.

Commentary

This report is for a Digital Technology outcome where the candidate is developing an outcome to assist their peers prepare for NCEA exams.

The report is written with a strong student voice assisted by a good writing frame that enables the candidate to explain and discuss to the Excellence level.

The writing frame has a simple format that is repeated throughout the report. Each step of the frame gives the candidate the opportunity to discuss a variety of technological modelling techniques and the associated risks and how the candidate managed the potential risks or made decisions that eliminated the risk. This writing frame steps the candidate through the Achieved and Merit requirements in a logical and sequential order.

The 'could' and 'should' requirements are clear and concise and enable the candidate to go into a depth not seen in many other reports.

Main point for Excellence;

- Validity and reliability are discussed broadly not just “my stakeholders are reliable”, which is what a number of reports did; this report actually discusses the validity and reliability of the stakeholders' feedback from results achieved through testing, of discussions, of general feedback, of techniques used, etc.