

AS91358 2.5

Level 2 Report

REPORT L2 Technology: Demonstrate understand of how technological modelling supports risk management AS91358 2.5

I have the opportunity to design and make a surf board or a guitar, i will be designing and making a surf board the “hess construction method” in a nugget shape with a budget of \$110. I will develop the support struts from the inside of the board from recycled spa pool wood (sourced from mr Pearce our teacher) the eco bamboo ply wood material that i will be using for the deck and base of the board and also in the rails has been recycled. The stakeholders for my project will be Mr Pearce, Graydon, Harry, My Parents , Orewa College. To make sure we complete these projects successfully we are going to make three different full scale models. These three different models will help us to understand the risks and stop us from making mistakes (risks) on our own final projects. We use three different types of modelling, these were research based, aesthetic modelling, and functional modelling throughout our coursework.

Research Based: This form of modelling is used to research again and to get an understanding of what we are wanting our final board to be look like, and to show the stakeholders of what board I am wanting and how I want the final design of it too look. We also have access another surf board which Mr Pearce has already made so we can see what they look like. This will help us to find out what type of board we are going to make in our final design. This will minimise the risk of causing any errors to occur such as the shape being lost while I'm making the out line of my board. By using researched based modelling, i will be able to get the length and width of my board, with this method of modelling will help me manage the risk of making mistakes that will effect the outcome of my board, this will also stop me from building a board with the wrong dimensions and it wont surf well.

Aesthetic Modelling: This form of modelling is used to see how different surf board models look, to help us decide which form of modelling i will use to build my surfboard by looking at what boards are on the market of that modelling type, so i can see what shape and final look it will be. It shows you the different forms of production methods that you can choose from, so that we can make sketch ups. These sketches will help us to minimise the risk of getting the wrong measurements. It will help us decide what shape what form of production (because of how hard/easy/ time consuming it is). It will all so help us to understand more about the type of paint, varnish, stain (the aesthetics of the board) this will minimise the mistakes made on the finished project. This is when i choose personally to have no graphics on my board other than the dimensions and the name on the bottom of the board. When looking at different forms of modelling i found that i wanted to make a “hess method”, this was because i liked how the rails just blended into the board compared to the other forms of modelling, i also choose this method because it used mostly wood compared to having a foam shape first.



Functional Modelling: This form of modelling is used to minimise the amount of mistakes that could happen, this involves both the template that we made, and when i made fins. we used real life templates that we sourced from the internet to make the template for the jig, using templates helped us to fix the mistakes we make when we lost the centre line ensuring that the board is symmetrical. This will help us stop from making minor and major problems that could lead to the board being water logged. I have used this method by making different rails (making them first) i tested these once they were glued up we tried to snap them and they were very resilient, i also tested the surf board by drilling a hole into the nose (then adding a valve) this is to let the hot air escape once you leave it laying on the grass on a hot day it will expand and blow up.

Research A: Reversed Engineering Product Disassembly: We had a look at a few different surfboards that Mr Pearce had all ready made or purchased and talked about what is good or bad and what can be done to a better standard and so that we don't make as many mistakes as we could of done, i fell that with this help i made a lot less mistakes that i could of made easy with out this help. We also made full size prototypes (but we looked online at the outline of some surfboard that are already in production this also helped us to choose what shape we made) of some forms of modelling but i did not have anything to go off as i continued the prototype of the "hess method" but seeing what the other board's looked like made me want to finish the "hess method" that much more.



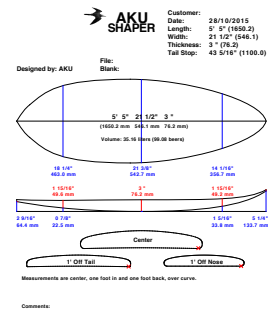
The hollow board: research
The next major change in surfboard design was in 1926 when one of the most famous names in surf history; Tom Blake designed the first hollow surfboard. The board was constructed of redwood, it had hundreds of holes drilled in it and was encased with a thin board of wood on top and below the board.

Research B: Online Research: we looked online at the different forms of making a surf board such as hess (which i did), comp-sand, foam these were all used to help us to see what from of construction modelling we wanted and what was used to, these also helped us to know what steps to take by watching videos of how the professionals made there boards, this form of modelling helped us to stop making mistakes such as losing the centre line and and rounding the rails to much to what i need, due to poor shaping. this form of modelling helps us by minimising the number of errors that can go wrong and so we ensure we have the necessary recourses such as tools.

In conclusion, the two forms of research modelling that i used were physically looking and feeling a surfboard, and watching online how to videos. all together these made it a lot harder to have stuff ups no matter how big or small it was, it was also go to understand how easy/ hard it was to do the different models. These both made it possible to make the board with the zero mistakes and making it possible to make a board look good with minimal errors occurring on the project.

Aesthetic Modelling: Building A CAD Mock-up On Aku shaper:

Through doing the previous research we found that the hess method was the one that i wanted to do it, because it was the one that had the most wood in it with out having a large piece of high density poly. We made Aku Shaper sketch ups to help us see what our boards will be looking like once they are done. we then rated our designs by process of elimination this helped me to decide what i wanted the final product to be (a hybrid between all of my designs). We discussed this with our stakeholder group consisting of Graydon, Harry, Mr Pearce, My Parents, as i need to match their need and whats i got feed back about my shape and what i could change to see what it will finally be.



concept	working drawing	3d model	spec 1 Weight	spec 2 Height	spec 3 Budget	spec 4 Fin	spec 5 Transport table	spec 6 Fish-tail	spec 7	spec 8	total
1 Broken Tail			5	7	7	2	9	9			30
The Fin			7	9	7	2	7	9			33
12 fins			9	9	7	2	7	9			33
Winner 12 fins			5	23	123	123	1	23			3

I had to change my design as i continued a board that had just been started.

Functional Modelling A: Building Surfboard Fins:

by using functional modelling i was able to make fins and test them out, and i could then later change the way that i have made them this time to make them either stronger or quicker to make (the first fins i made one of them snapped as the board fell over with them in and it snapped at the plugs). Functional modelling will help me change the way that i do some steps in my final design. we discussed this with our stake holder group consisting of Graydon, Harry, Mr Pearce, My Parents, because if it was to go out on production it would have to look as good ask it possible could with it working to a high standard with out breaking. By making wooden fins i was able to test my board with out having to fork out any where from \$50-\$120 this also saved me from buying the wrong type of fin (they don't fit, not the size or or shape i need).



Functional Modelling B: The Final Prototype:

Through exploring the the different types of surfboards available in production in previous research we found out that there are an infinite amount surf board configurations, colours, finishes and aesthetic details used. Functional modelling will help me change the way that i do some steps in my final design. I made a minor stuff up in the nose not being square but i fixed that by sanding by eye so i looked as square as possible, with functional modelling this will help me minimise the risk of this happening again by having the perfect replica of each rail before glueing the two halves together. we discussed this with our stake holder group consisting of Graydon, Harry, Mr Pearce, My Parents, because if it was to go out on production it would have to look as good ask it possible could with it working to a high standard with out breaking.

In conclusion i used functional modelling to actually help me in making my surf board fins to higher quality and so that they don't snap at the tabs, if i was to do it again i would change the jig so that there are no high low points in the rails.