A – Level coursework

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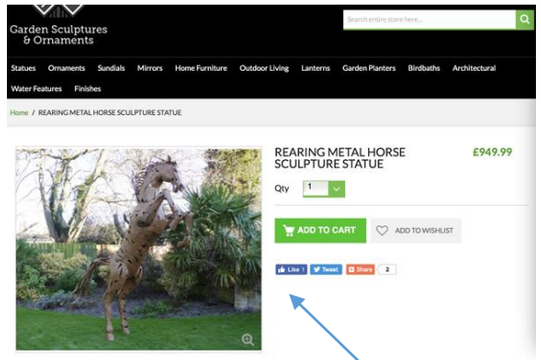
Centre number – 62451

Candidate number - 6122

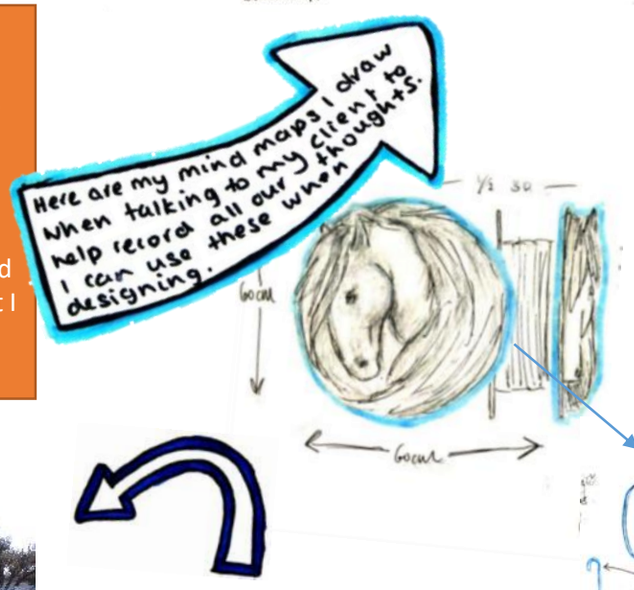
- = Investigation
- = Processes
- = Research
- = Client feedback
- = Stakeholder
- = Health and safety

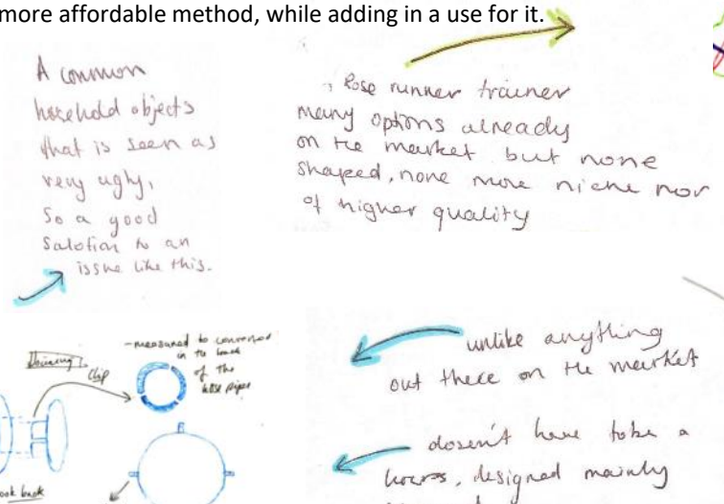
Investigation of the context and feasibility

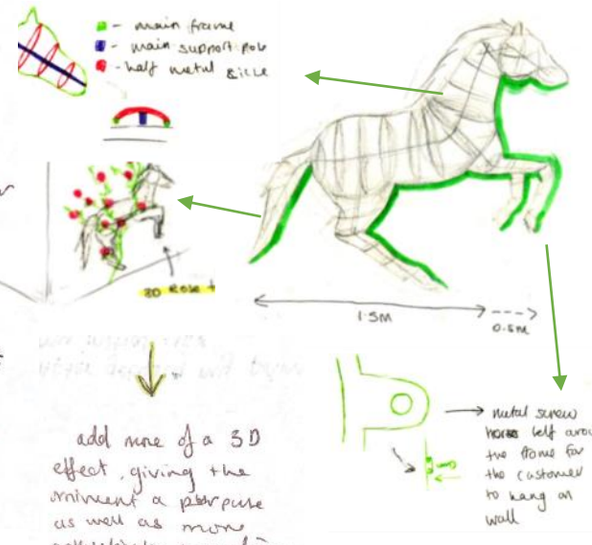
Amanda is a full time manufacturing manager for a medical device company, With little time to maintain her large garden looks for suitable, multi functional ways to make her garden look decorative without spending large amounts of time on maintaining it.
After speaking to her about her needs and wants and letting her look at my topic webs and product ideas, she gave me a starting brief that I could use to help narrow down ideas to and start producing designs



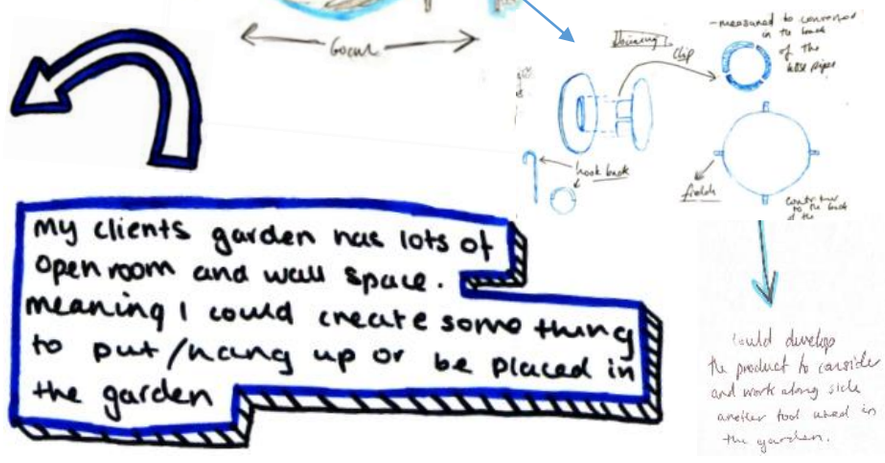
Here is an example product that Amanda likes and wishes to include within the product we product. This sculpture is very expensive, priced at £949.99, while I understand that a lot of time and effort has gone into creating this as well as materials etc., I feel that the product is far to expensive and I feel I can incorporate a similar design into my product and do it in a far more affordable method, while adding in a use for it.

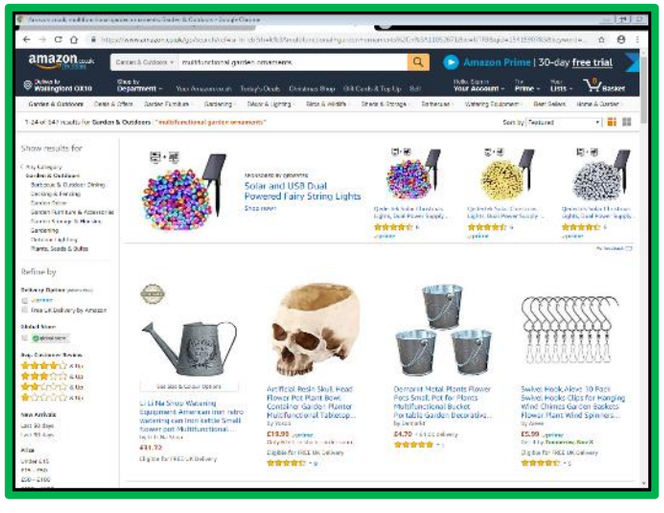


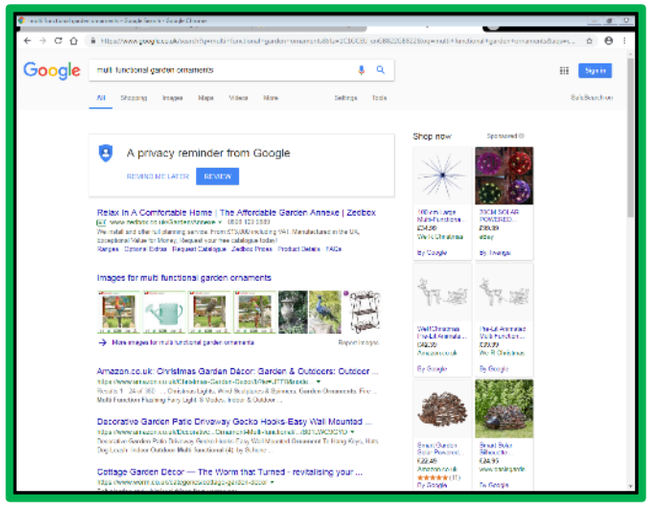


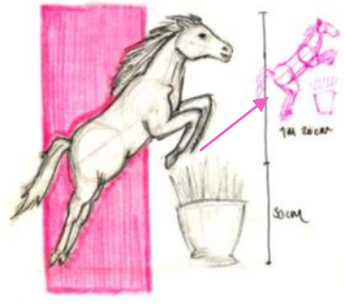


Pictures of clients garden









life size horse sculpture, jumping over a planter. items like that on the market.

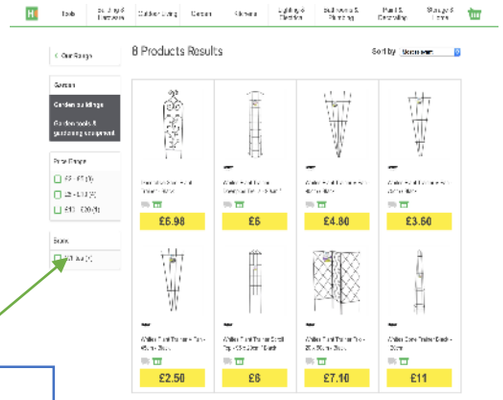
to scale might be dangers and expensive, as well as being heavy.

Is there a demand for such a specific, niche object? could turn it into a product designed by many...

Investigation of the context and feasibility

1st hand research - Here is a iron horse cut out I found at a antiques yard, this has a similar aesthtic to the horse running plant garden decorations.

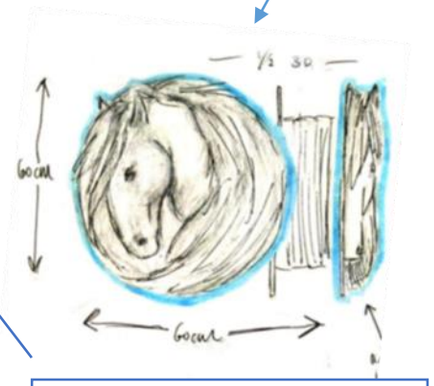
Research
vine/runner plant growing frames - from this I've found the shapes were boring - making me feel I could change and develop my design.



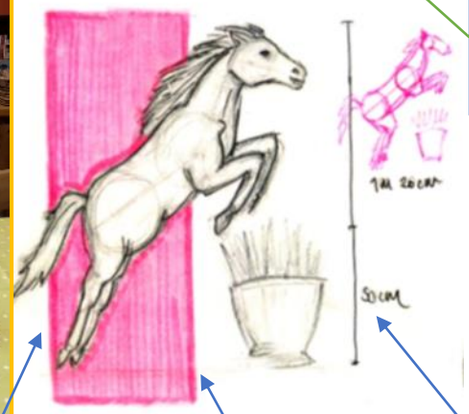
Material
I will try and use recycled material where possible. Some form of base will need to be created for the other features to be connected to. A light weight material that can be bent and manipulated will need to be used. Metal is the most suitable option but it could be made out of a form of wood?

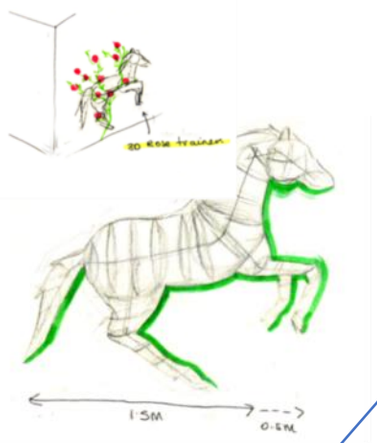
Size
Being a rose trainer, the model needs to be big and provide lots of alternative routs for the flowers to grow up and become strong, after doing some research a trainer should be at least 90cm on average and 30cm wide.

Cost
After researching plant trainers its clear to see that price is dependent on sizes and material the trainer is made out of. However the products are still pretty cheap.. To make a formal shape, it would increase the cost of the product but maybe there's a market for that..



Aesthetic appeal
This design is a practical design. it's main purpose is to look good Its function is to cover up an ugly common household garden accessory and make it more visually appealing.



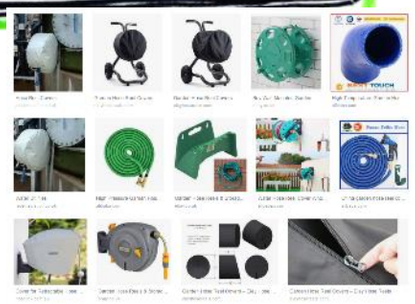


Safety
Due to its life size scale and its dramatic pose, the sculpture, is likely to move around in the wind and rain, and will be easily off balanced.
The safety of this initial thought process, I would deem to be unsafe, but is definitely eligible to become a fully functioning, safe product.

Function
The products function would be , to be a high quality decorative planter for a bush or large foliage plant.
Its aim is to make a garden look nice and to add character without taking up too much room and being too expensive

Environment
Where possible I would like to use recycled materials in my project. It then will contribute to; keeping costs down, adding purpose to the product and help the environment by repurposing landfill product. I believe that each of my context ideas could be made incorporating recycled materials

Research - after looking in types of hose pipe reel covers, I only really found soft cases, which were either boring or meant for offical reasons



Here is some 1st hand research I did when I went to a local village fair - this 3D horse from branch out in Wallingford.

1st hand Research
Heres a picture taken of me looking at a metal wire style giraffe with plastic sheets to add colour. This was found outside a Giraffe reservant in Dubia, Riverland.

After showing my context designs to my client I've established which route I need to go down - the hose pipe - including my 3D elements - adding dimention and relife.

NEXT STEP

[Design Brief](#)

Design Brief -

After researching into the market and offering my designs up for critic from my stakeholders I found a gap in the market that fits the clients expectation as well as being interesting to me, and offering lots of oppitunities and diversity in designs; finaing a creative, aethsticilly pleasing, storage suition to cover up and make presentable a hose pipe reel. i'm positive I can create a alternative option for my client that isn't messy or basic like some products close to what I wish to create. As there are similar existing products, im certain i can create, and develop a more prefect product focusing on the needs of the client.

Taking graphics last year makes me certain that I will not struggle drawing designs and coming up with new developments, however while my technigual knowledge is good, my making skills lack - away from the modelling athspect. Meaning that the product will be challenging but yet achievable and motivating.

My next step would to be to create a easy way to lay out all the things I must consider when design and then investigating into existing.

Investigating the needs and wants

Design Considerations

Aesthetic Considerations

Sources of inspiration

- Animals/ natural world – Amanda wants the outcome to have some connection with wild life or animals in some way. Knowing this I need to design a range of products that include animals in some way. I'll start by experimenting with a range of animals
- Sculptures – My primary user wants the product to be sculptural. Using existing sculptures to get influences will help me find what kind of shapes work best and understand a bit more about what materials will best be functional but also give that look that my client wants.
- Sustainable art – Amanda wants me to consider the environment where possible looking at a range of artists that have combated producing art and the environment will help me find a suitable material to use when making.

What visual elements are most important?

- Colour – there should be a sophisticated colour theme to the product – Preferably sticking with a metal
- Shape – Client requested me to considered that during the warmer months young children are likely to be running around and may potentially come into contact with the product, meaning that the product needs to be safe – chemically treated? Clean, rounded corners? How to add dimensions but reduce potential contact/ damage?
- Image – Whether the product is shaped to be something else or if the product has an image on it, it needs to be suitable for everyone to look at – all age appropriate. The image also needs to be some universal, easy to see and understand

Materials, Finishes and techniques

- Materials - Made from a sustainable, solid material that can be manipulated.
- Finishes - Amanda wants a colourful end product, meaning one of the finishes would be paint I could add a gloss to the product to guarantee a longer lasting finish on the product but isn't as good for the environment.
- Techniques – as the final outcome will have a shape to it and a design in it. The techniques to get this across would be dependent on the material I end up choosing for the product – Amanda wants 3D elements added to it as well as fine details, techniques like etching and engraving are likely to be used whatever the material I use.

What should style be?

Client wants the product to fit in her garden and match her overall aesthetic;

- Sophisticated
- Novel
- Colourful
- Artistic

Market Consideration

Who?

I am making my model for my client, Amanda, but she is just a representation of the market for this product. In school my market is? Amanda and I need to consider her needs and wants, in industry, my clients are likely to be a niche market of people who are looking for a sculptural solution to a common household product

Purpose

- Primary Function – user needs, user wants a multi functional product that will fit into her existing garden and provide a function that will benefit her
- Secondary Function – wants the product to be aseptically pleasing. Consider the environment and for it to incorporate an animal.

Practicality

- The product should be multi functional as said by the client, Amanda. Be able to be held on the wall and blend in with the garden. While also being some what environmentally considerate – meaning thinking about what materials are best as well as finishes. What chemicals are in them?

Functional Consideration

Production

In school, my product is a one off, prototype that will be tested by my client and reviewed by a range of stakeholders. In industry my product would be a niche product, due to the nature of the methods of making the final outcome, meaning the production rate would be batch.

Constraints

- Weight – Needs to be light weight so it could be moved by pretty much anyone or could be mounted on the wall.
- Cost – Needs to be reasonable for the product. Client doesn't mind paying more for the product. Would this make it a niche product?
- Material – Weather proof, needs to be long lasting. Amanda wants the material to be as reusable as possible – made from recycled materials – the material could also be recyclable, Metal?

Materials and techniques

- Materials – from what my primary user is looking for, I require the material to be curved, shaped, bent and manipulated. I need a material that will allow me to-do this without breaking or snapping – this may require me to use a range of techniques. Overall the materials also need to be suitable for outdoor use on a long term basis.
- Techniques - while building my prototype for my client I must consider what is available to me and the most effective way create my product. My client wants a sophisticated, artistic finish to my product, so some techniques I will need to use might result in me visiting local workshops where I will get a professionals opinion and help. This out sourcing is something I would have to consider when converting my product into industry manufacturing.

Here is a list of all the technical and functional requirment I feel I must consider before making my product.

Aims	Functional Specifications	Technical requirements
Functional	→ enable the user to have 2 function for the space of one → incorporating waste within a graphical representation / 2 plausible tools into one multi-tool	→ manipulation and combination of a mix of materials - metal and wood? → requires experimentation of ergonomics of common garden tools needs and wants → Research into mix of functional tools as well as methods to create
Practical	→ my product needs to consider how much space it takes up for what it does, weight and shape. I need to be mainly comfortable and distinctly recognisable as what it is	→ experimenting with different sizes and material to create the perfect outcome → requires testing and evaluations from a range of people with different capabilities
Affordable	→ materials and process need to be consistent with the idea of being on a budget → the prototype may be more expensive to consider the product for industry as well	→ sacrifices of quality to guarantee a affordable product → bulk material purchases and testing any cutting to maximise use
Aesthetic appeal	→ look appealing - keeping an element to please client → to be certain and appropriate for a range of ages and considering at home	→ Research into symbolism → testing and evaluation of the products look → manipulation of materials to incorporate to perfect outcome
Sustainable	→ long lasting → environmentally friendly → weather sustainable	→ exploration into a range of materials and finishes to provide the best outcome

NEXT STEP:

How I know what my client wants I need to do some research into existing products: 1st and 2nd hand research. Then I need to start designing

Research into existing products – 1st hand research

Here I am holding a metal welded duck, which was being sold at Basildon Park – a National Trust Property.

Made from up cycled products and recycled horse shoes , the rack shows the possibilities of making a product from anything.

This is me looking and analysing a metal flower garden decoration at Notcutts garden centre – I found that the quality was high considering it was clearly a mass produced product sold for low amounts of money. – While the metal used to make it was very weak and flexible, considering the amount paid for one and the quality of the paint and gloss finish on the product, it's a good value for money.

Here I am, examining this glass and wire pot ornament, I thought this one was interesting as there is a mixture of materials and techniques used to create a very simple yet effective object.

Resin statues made to look like they are made from marble or some type of sediment rock gives the look of value and luxury without being costly and extremely heavy.
The statues are highly detailed and have captured the finer details even though its been made from a mould.

Made from a thin metal, most likely iron.
Clearly it hasn't had a finished added to it and has been left to rust which is actual a very environmentally friendly This trill reduce the product life line.
Rust will reduce the strength of the product leading to cracks and breaks – here you can see the joining rivet has snapped.

Here I am evaluating the price of the product. The cost of this solid, copper moulded deer is very high. I feel the price is justified due to the cost of materials used as well as time spent making it. The quality of the product is equally high.

When I was on a riding hack around Heathfield Park, I found this wooden bench with 2 animals carved into it. From the look of it the bench has been outside for a while as it has moss growing on it. While the bench is very aesthetic appealing, it is very heavy and would be very hard to move.

Research into existing products – 2nd hand research

Made from repurposing a cheap material – chicken wire.
Left to rust so no finish has been added.
The natural process does work in the animals favour as it is the same colour as the animal.

These two are both made from using natural materials that have been gathered and treated to create a shape – material cost would be low but it would take so long to gather enough to make something as impressive as this.

A 3D model created with bamboo sticks then cut into a shape. A different way of creating texture, and shape as well as adding weight to the model.
Relatively cheap to make but would take a long time.

metal wire sculptures, made with iron wire.

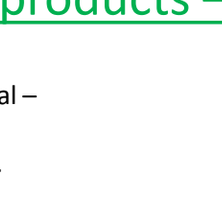
good sizing wouldn't require too much materials

Rusted finish → the cheapest finish

Iron metal frame

Very deligate...

Colour:
- glass
- paint
- glase



glass to add colour

metal

repurposing drift wood

Hard material to find without it being unnatural or would become to expensive

EEE ↓ ↗ elagent

life size

balanced weight ↘ ↙ left to rust

no colour but detailed

very heavy

Aethsetically pleasing.

Base of support

good shape

Sophisticated idea - elagent shape

one off pieces

layering

wood

wood would be biodigradable - eventually it would ROT.

bamboo sticks glued together

Horses

metal wall art

3D elements

one view perspective

would be light weight

wall pieces

opposite to ornament

not the whole body - means it can be more detailed.

sharp edges

health + safety

This would be right up my clients street!
With more colour added to it and made into a practical multi functional garden tool, this design would be ideal.

Made from recycled materials

novelty garden ornaments

welded together

loads of colour

child like

beer cooler

Multi-functional

bottle opener

made from Acrylic

Mini solar pannle

cute!

detailed + functional

multi-purpose garden light.

casted metal

eco friendly

made from Stone/concrete

not too big

mass produced

one colour

While I looked into this brand of products as 2nd hand research I bought a small example as I would like to carry this type of design and concept on, into my product.
Its colourful and practical - -multi functional and appealing. Plus being shaped as an animal which works well for me.

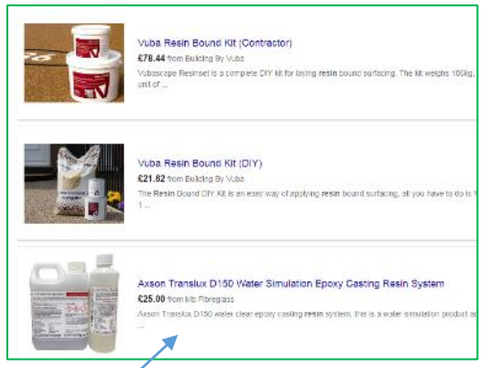
Multi function resin bear, would be light weight, is colourful and practical.
Very novel and shows a good combination of all the elements I want to include

Exploration of materials

Although I knew I wanted to work with a material I knew about – like metal or wood, I still chose to do some investigation about what was available to me, what would best suit the area I'm developing and what would be the most cost effective and environmentally friendly. This way I would guarantee to be able to offer a range of appropriate options to my client in my initial designs.

Using my first hand and second hand research I knew that the most common options for making an outdoor product considered of; concrete, resin, wood – most commonly oak and metal – normally iron. Knowing this I did some more research into each material and the method behind making a product from it.

From this I've come to the conclusion that metal would be the best outcome as it can be finished in a multitude of ways, can be used in its primary form but can also be used as a recycled material – meaning it can be environmentally friendly.



Concerte →

- many people use concorte when making their own garden ornaments (DIYs)
- concrete can be some what coloured and can be painted on
- concerte can be chiped and broken and is very heavy but is a cheap way of creating lots of products - within a time limit.
- concelte can be polished as an alternative finish to just leaving it or painting it.
- using concerte does mean detailed designs are unlikely to come across if using a mold, unless you make the mixture of cement and ballast thinner

Resin →

- usally made in mass production, the light weight material can be toxic as its the manipulation of polymers that creates this long lasting, somewhat strong product.
- can be coloured or painted or even glossed
- the process means that fine details and delicate movements can be captured ~~effects~~
- when mass producing the product becomes fairly cheap and its usally resin decorations that have other features like lights in.
- Resin can be chipped and will loose its colour after a period of time.

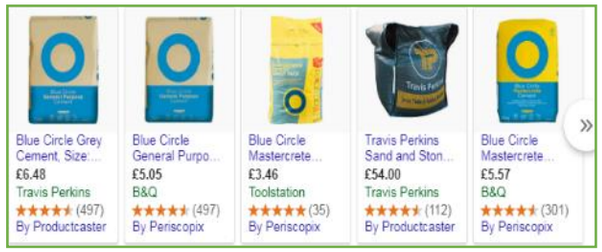
Material properties

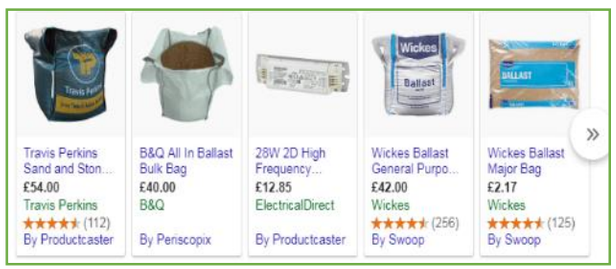
wood →

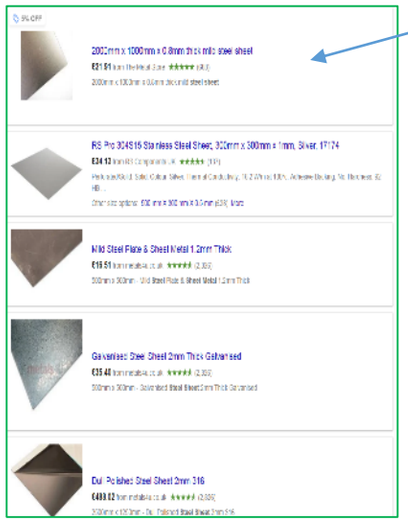
- very expensive to create
- can be realitatily detailed
- can be carved and engraved as well as being stuck together
- can be glossed as a finish, left, painted.
- wood is available relativly cheap depending on what type and where you get the wood from - environentaly friendly wooding areas are more expensive.

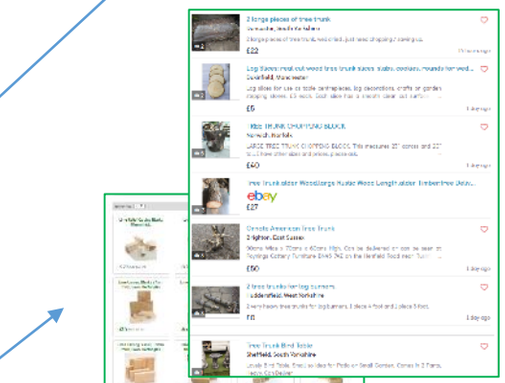
Metal -

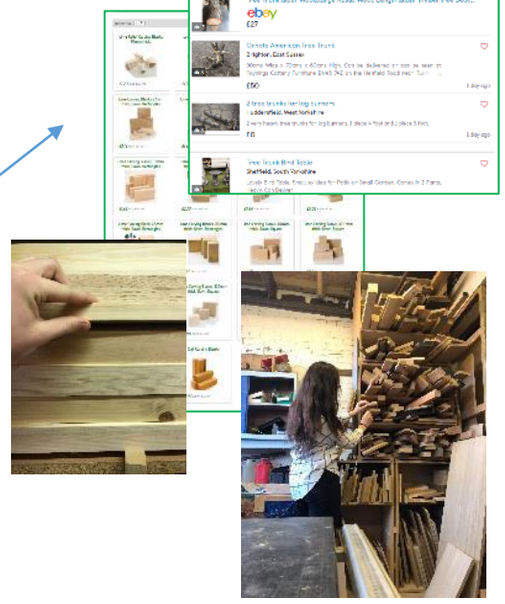
- usally costly but worth the cost as metal can be shaped and textured as well as engraved like wood.
- metal can be finished in a range of ways as well to make it approprate for the surroundings; painted, powker coated, can be left to rust as well as being glazed and varnished for a shiny finish.
- metal can be manipulated in such a large range that it can highlight a range of details as well as give realisic elements.
- To create an ornament sheet metal or recycled metal could be used - meaning the material is quite versatile after getting a primary use.
- many universal, multi function products are made from metal so its not like the material would be challenged.
- cost wise, metal can vary depending on what metal, how much and how its finished.



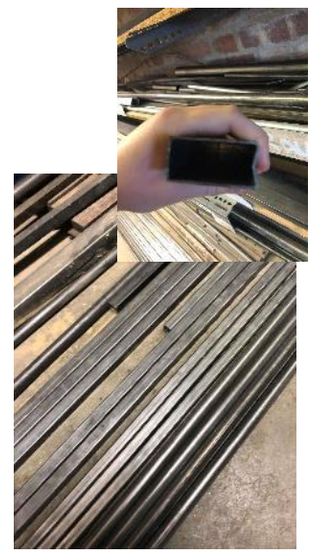








Here are some pictures of me looking at the materials available to me at school



Exploration of technical requirements for materials

material	functional specification	technical requirements
wood - oak	→ able to be carved, etched, engraved, rendered → can be finished in a manor of ways → some what a sustainable product can be recycled, reused and upcycled → used best for one-off / prototype products.	→ while we can do many different processes such, tasks anything extremely detailed or curved could prove of wood would have to outsource outsourcing → would be really heavy would be good for the whole design, would be good to add support at storage to the end corner.
Resin	→ able to be coloured and shape in a range of options - endless options. → very light weight - can become very brand goals → very long lasting it cannot be accurately. → can be recycled after use	→ would require assistance to be created → would need lots of testing process to find the right balance of weight and support → as resin is created by a chemical type toxic chemical reaction would require special safety.
metal - Mild Sheet	→ Can be moulded, shaped, cut, engraved, finished, painted, molded and manipulated in a range of ways. → can be recycled, very long lasting and some what sustainable → can be very heavy.	→ outsourcing for any type of machine gained help → experiment to find the right combinations - finish + material → would need a lot of physical use
Concrete	→ very heavy, but suitable for garden use but not so much for enhancing a room → weather resistant but could have starts to crack over time → good to communicate a pattern	→ Require a mould would need to use a wooden former → would need refining afterwards to remove it's bulky and rough → to colour a large amount of dye is needed.

Investigating into the differences between school and industry

In school VS. in industry

Anthropometrics – study of human body measurements for use in anthropometrics classification and comparison

- In school measuring my products against the human body is possible as should be considered but not as in depth. Considering proportions of the product and the hose it will be fitted on and then considerer who would be using it.
- Anthropometrics in industry is important to get the best fit for the majority of people and the most suitable for the product and or the services it supplies.

Aesthetics – A set of principles concerned with the nature and appreciation of beauty, especially in art.

- Doesn't need to look complete as a final product as long as it can be justified as the product is a prototype. This would be interpreted to me as completing a good looking, client friendly and aesthetically pleasing product.
- In industry, aesthetics is important the product does not look good as well as being functional, the likelihood of it being sold is low.

Cost – the required payment for an object or services.

- Cost isn't important in terms of actually selling the product as I will not actually be selling the product, as it is a prototype. I will be considering cost, how much materials cost, manufacturing costs in relief industry but also the affordability to the client.
- Similar in industry cost is considered every stage, especially when trying to benefit the consumer/client.

In both stages cost will be consider as the price needs to be considered in the development of the product and the real life industry.

Client – A person or organisation using the services of a professional or company.

- Clients are extremely important in the development stage of designing. In this scenario, where it is a 'prototype of a new product created in school, working with a client, catering the final outcome to their needs and wants is very important if you want to fulfil the brief for the client. For my project I am making a product for someone. This is different to a customer who would be looking for a product. Not someone who has enlisted my help on a specific project. Clients are usually specific to one-off production pieces as they tend to be very specific to one persons needs and wants.
- While many companies in industry also have clients and may work for specific target markets, their sales are more general and the people the products are being made for would be considered customers. Customers are related to mass marketed or batch production products where one product has a general or specific use that is needed by a large group or sector of people. If I was making my product in industry I would still need specific customers to offer developments and opinions on the product I am producing, just like in school. These peoples opinions would not be considered in so much detail as a one-to-one construction of a product like I am doing in school.

Environment –

- Environment can be interpreted as either the habit someone is most commonly live in or more specifically the natural environment including plants, trees and organisms living off of or in etc. and any issues around it; deforestation.
- In my 'in school' project, I will try and consider the environment as much as possible, in terms of, materials, manufacturing process, finishing methods and comparing the 'in school' product process to the 'in industry' process.
- In industry, the product would be batch or mass manufactured I would have to take into consideration the waste materials after the product is made, how much energy would be used, how the materials are sourced etc.
- To combated environmental issues, in my prototype I will experiment with many different recycled materials and hope to find a suitable material that could be used in industry

Size –

- My prototype will be made to size as it is possible for me to do so, in school I will also make smaller models to work on or develop certain areas.
- In industry, the models would be made to scale.

Safety -

- Health and safety is important in every situation, in school and industry as many different tools, manufacturing process, materials and pretty much every step of the way.
- In school the main things to be aware of, is the use of any tools I have not been exposed to yet as well as any sharp materials used either initially or after the material has been changed but not finishes – i.e. sanded.
- In industry more heath and safety issues are needed to be aware off as there are more people to look out for and the company are accountable for. As well as bigger, industrial machinery in use.

Function – An activity or purpose natural to or intended for a person or thing.

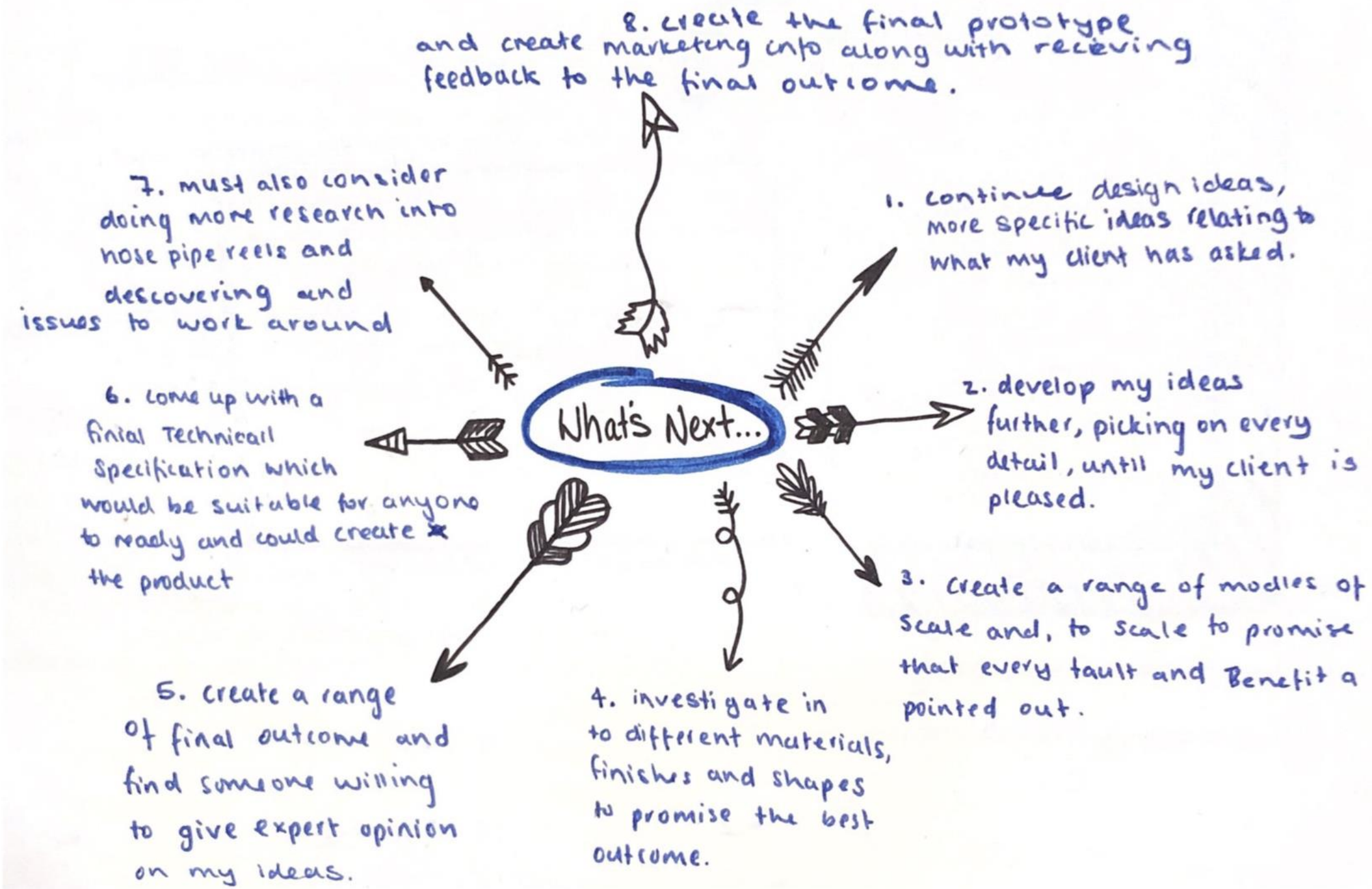
- The function of the product would be the same in industry and in school. The function of the 'in school' prototype is more tangible as I'm working with a direct client who may change opinions or offer developments for the on going product. In industry once a product is made, if developments are needed to be made, a new product could come out of that.

Materials – the matter from which a thing is or can be made.

- The material needs to be made from something durable and is substantial to outdoor weather and other environmental factors. I would also like to keep it as environmentally friendly and recyclable as possible.

Moving forward…

Continuing on with my project I need to consider covering all the areas I've suggest below as well as considering another range of factors; School vs. Industry, client needs and wants, stakeholder input etc.



Investigation of context of imagery

Animal design

These designs are to help choose which animal I will be using in my designs.

Horses –

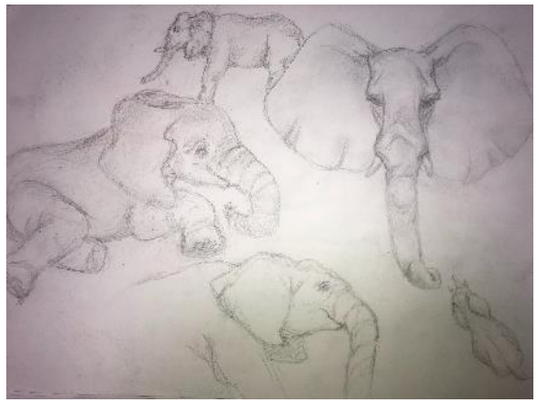
STRENGTHS
- Horse come naturally in different sizes and shapes as well as age. Could do a foal to scale.

WEAKNESS
- Very difficult. Has many elements to it that could take a long time to perfect, model and make with risks that pieces could cause health and safety issues or/and could break or fall off if they are too fragile.

Giraffes –

STRENGTHS
- Giraffes haven't been done much before. There are not many options on the market already.

WEAKNESS
- The height of the animal means that it would become hard to work on when its being created. Potentially becoming top heavy if large amounts of metal is used to create the giraffes head/neck.



Elephants –

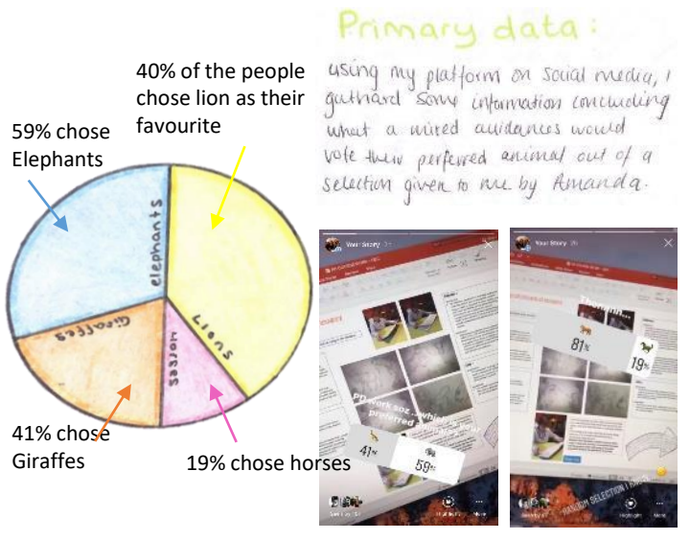
STRENGTHS
- An elephants head alone is very large, and would make the perfect bust sculpture that could be hung on walls or mounted on other objects. Doing just a bust would take up less space expanding its environment use to indoor and outdoor, compared to the other animals like the horse. That would be best done as a full sized product that would subsequently only be able to be used outside.

WEAKNESS
- An elephant would increase health and safety issues. The animals would be prone to becoming top heavy and therefore could fall/tip over easier when force is applied to it. Doing tusks on the elephant increases a hazard people could catch themselves on them, this could also be said for the trunk and ears.

Lions –

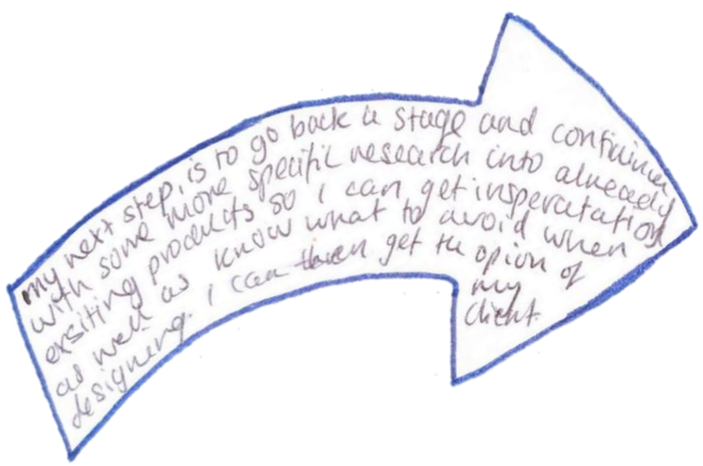
STRENGTHS
- The animal isn't that big, meaning it could be made to scale but if it needs to be smaller still, the option to do a cub or a young adult lion means I could still do it to scale.

WEAKNESS
- The Animal is quite basic. Might have to do more than one to get good value for money and to bring the aesthetic appeal.



My client 'liked' all my animal ideas but understood that some would take more work than others, and some would become too expensive, delicate etc. From talking to Amanda, she chose the horse design overall as it is her preferred animal that has a sentimental value behind it.
Going on from this point, I need to come up with a range of ideas that somehow incorporate the horse into the product, while still having all the other properties Amanda has previously mentioned.

Play me



Investigation into existing products (specific) First hand research

In this series of pictures my client and I went to a National Trust organisation. They were selling these to scale wooden horses for the garden. Similar to my 1st initial idea but no longer the specific route I am taking my design in. In the middle picture, only the head and neck are being captured in a sculpture form. The design helped show me that I could potentially use small multiple pieces of metal to create a flowing shape on the hose reel.
My clients opinion of the head shape was *'Beautiful! But for the price and for its lack of function, I would have to pass on that for my garden.. Wood is a lovely material to use, but with the amount of rain we have each year, it wouldn't last very long. If I'm going to spend £150 I would like it to be more practical.'*

These images came from garden ornaments at Basildon National Trust home it is made from upcycled, treated drift wood. An environmentally friendly way to create something so beautiful. This would take a lot of time to create as material would be hard to find and gather.

Here is a plastic life-size horse, while it is easy to see the horse has seen weather damage as well as general cracking the horse has remained sold and held together - very light weigh practical material

- I found the plastic horse in an antiques shop in Hungerford. It was being sold for £100... really reasonable.

Chicken wire, horse head sculpture, found this in another antique shop in Hungerford the garden decoration was finished with a powder glaze giving it strength colour and adds an element of saftey. the orniment was made from a cheap material but was being sold for £250.

This example came from a National Trust shop in Lyme Regis. Itis made from a sold piece of upcycled wood that has been to given in a shiny finish. Oiled.

This model was **found in an antiques warehouse called, The Old Flight House in Heathfield.** This sculpture Is **made from chicken wire and is built up and covered with glue to hold its shape and to add texture.**

Research into existing product – analysis from client

After visiting Pangbourne with my family and seeing this elephant sculpture, I could a to scale elephant made from recycled metal pieces. **I've taken some photos of the creation and have asked my client to add comments.** Red for weak areas/ disadvantages and green for strengths/good areas.

Aesthetic appeal
looks life size.
Good colour match

less definition due to colour

Cost
long term investment
Statement Piece

low volume output due to high cost

Customer needs and wants
Requires secure fixings
All year round feature

Environment
Good use of recycled pieces?
Should be durable - long lasting

Safety
not a toy -

Fix Securely
no sharp edges

Size
Large - would need permanent position + fixing.

Is there a choice of sizes.

Function
Show Piece

Material
Robust

How does the metal weather?

Investigation into existing products (specific) Second hand research

1. ***Fit for purpose –*** This excising product is meant to be hung on a wall for decoration, potentially to cover any issues with any outside walls or fences – cracks, knots etc. As it's a decorative piece I would say its fit for purpose and the beautiful metal work reflects that.
2. ***Health and safety –*** while the piece has been treated and there are minimal sharp corners, the mane has been angled left, leaving potential for people to scratch or hurt themselves if lent against.
3. ***Moral issues -*** There are no moral issues surrounding horses in general by any religion etc. nor metal or any process to creating a sculpture.
4. ***Size –*** The sculpture is a wall mount, different to many of the other samples here. While it is 3D the horse is layered not moulded or has had elements added to it.

1. ***Meeting needs of target market –*** A potential customer would be a horse enthusiast who is looing for a quality wall ornament made from an industrial material. As far as 3D metal horse ornaments go, this one would meet the needs of target market. The needs being to look authentic, at a high quality.
2. ***Quality of manufacturing –*** This type of metal sculpture would either be made by casting, which means it would be batch produced or its been hand crafted meaning it was a one-off-production piece. From this image I would say it is a cast and then extra elements have been welded on. From the image I would say the quality of the final piece is extremely high and fit for human use as the piece has minimal sharp corners, has a clean and tidy finish on the metal and is able to be hung on a wall without causing damage to the area.
3. ***Function –*** decorate a wall , adding character to a room or outdoor area.

1. ***How well is it designed -*** The piece takes in to consideration its surroundings, using the wall as a mount but also as a aspect of the piece. The horse has been shaped to look like its galloping through the wall and the metal mounts on the horse has been used to make it look like stream in to the wall and the mane flowing in the wind as the horse travels at high speed.
2. ***Aesthetic appeal –*** The overall look of this metal horse is good. The position the artist has chosen works really well with the metal used to create the horse.

1. ***Environment –*** The process of forging metal is generally bad for the environment, the process of using fire to warm the metal is done by using coal which is unsustainable like the metal used. Elements of the horse could have been reused from previous projects as metal can be re-melted and moulded again.
2. ***Price –*** for this piece, it is being sold for £949.99. This price covers the cost of the product, materials used, facilities used, tolls used, common costs etc.
3. ***Meeting the needs of target market -*** Overall this product meets the potential needs of any customers. Some of the downfalls may be the pure size of the sculpture, the weight of it and the cost of the product.

1. ***Materials –*** Unlike the other images in this section, this sculpture is made from wood. Drift wood to be more specific, collected by the artist from local beaches.
2. ***Health and safety –*** For the wooden sculpture there is little issues with the safety of the model. Minor concerns would be sharp, jagged ends of wood which could catch, scratched and hurt any one who brushes against it, as well as splinters. When making the sculpture issues from sawing, drilling and shaping materials, but nothing out of the ordinary for this kind of project – common issues that are associated with one-off-production tools.

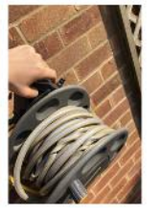
1. ***Material –*** This horse sculpture is made from recycled material welded together, gathered from scrap yards, old machinery/ cars/ etc.
2. ***Size –*** Like most of the other 3D horses shown on this page, this is to scale.
3. ***Environment – a***ccording to the website for this piece, the horse is made from 'recycled scrap metal' and has been 'untreated to be reused again!'

Investigation of the context and feasibility specific to the hose pipe reel cover/holder

Investigation into hose pipe reels – 1st hand research

1.

2.



3.

Aesthetic appeal

Its fair to say that no hoes pipe reel is particularly attractive, None of these examples above look appealing to the eye, but this factor has been ignored as it does its main function well; to hold the hoes pipe neatly so its out of sight to some degree.
Image number one was found on the side of a hotel in Pangbourne. This example has been mounted on the wall, which moves it out of the way for any potential passers by. While it has a practical look, it looks hideous, and garish against the white wall.
The second images is from grandparents house, whilst hasn't been fixed to the wall, there is a hole to allow a screw to hold it up. While this hose reel is more tonal in colour then the first one, it is still unsightly and is much bulkier then the first images reel.
Finally the last image is of a portable hose reel, which while isn't a mounted hose reel is a good example of a multiple functional hose, as it can be wheeled around to where it is need, apposed to having to pull the hose out and leaving it out while you water, even though that function is also available. The aesthetics of this hose is average, bold colours means that the hoes reel stands out but due to it being portable, the hoes can be put away in sheds or other stores units instead of being left out.

Function

The basic function of a hose reel is simple to store neatly the hose pipe so it doesn't lead to trips and fall or the hose getting broken or noted.
Individual, due to different demands by customers, each of these hose reel have added functions
The 1st hose reels function is to smartly hose and cover the hose pipe reducing any nots to form.
Similarly, image 2 has a mountable hose pipe reel that also comes with a stand for the reel so it can be moved and placed on the floor or in a shed/storage unit or placed against a wall out of the way. The mechanism of the 2nd example is more basic then the 1st example, and as a result of that is much cheaper but does a similar job. Finally, example 3 is a hose reel mounted to a metal troll so it can be pulled around and moved while it is being used and afterwards t maximise the area it covers when watering and also means it can be moved to be put away in the most suitable way.

Cost

To find the price of these hose reels, I looked on the Homebase website to see if I could find the same hoses if not something similar to get a rough idea how much, on average one would cost.

From this I have gathered that, the cost of a hoes reel varies massively, depending on the properties it has – mountable, free stands, length of pipe etc. Because off this I looked at some available ones from the same website and found a more accurate average. The average cost of the average length hose pipe reel holder is; £45.58 for 26meters

Customers needs and wants

For a hose reel the basic customer requirements is simple for a mechanism to neatly hold and keep your hose.
All of these hose reels successfully do this.
Gaps in the market has also reviled different customer needs and wants like, the hose reel that can be mounted, one that can be moved around, ones with stands etc. All of them meet at least one of these wants.

Environment

All of these examples are made from plastic which is very normally for hose pipe reels. Its unlikely to find a reel made from anything different. Plastic is very un-environmentally friendly due to the chemicals used and the by-products produced when making it. After the initial making stage, the plastic can be recycled if it is broken of got rid off, although to re-melt it down, it would release the hazards chemicals once again.

Size

Exact sizes could be found from the Homebased website, but from myself measuring;

1. 20cm deep, 30cm circumference
2. 27cm deep, 28cm circumference
3. 35cm deep, 28cm circumference

Safety

As hoes pipe reels go there are minimal safety hazards in terms of the actually reel. The weight could course back pains if the reel is unrealistically heavy for its target audience – elderly people. Apart from the reel the hose itself could course safety issues as people could trip over the loss pipe if not stored in the reel, which was why a reel was made.

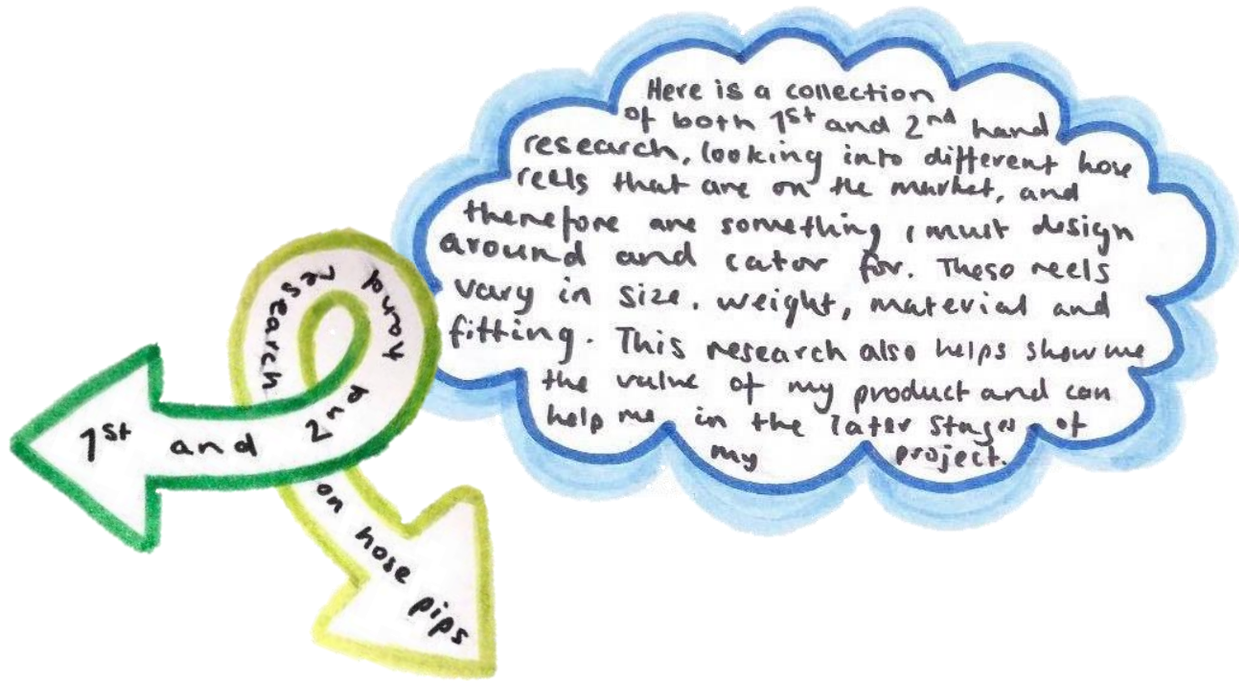
Materials

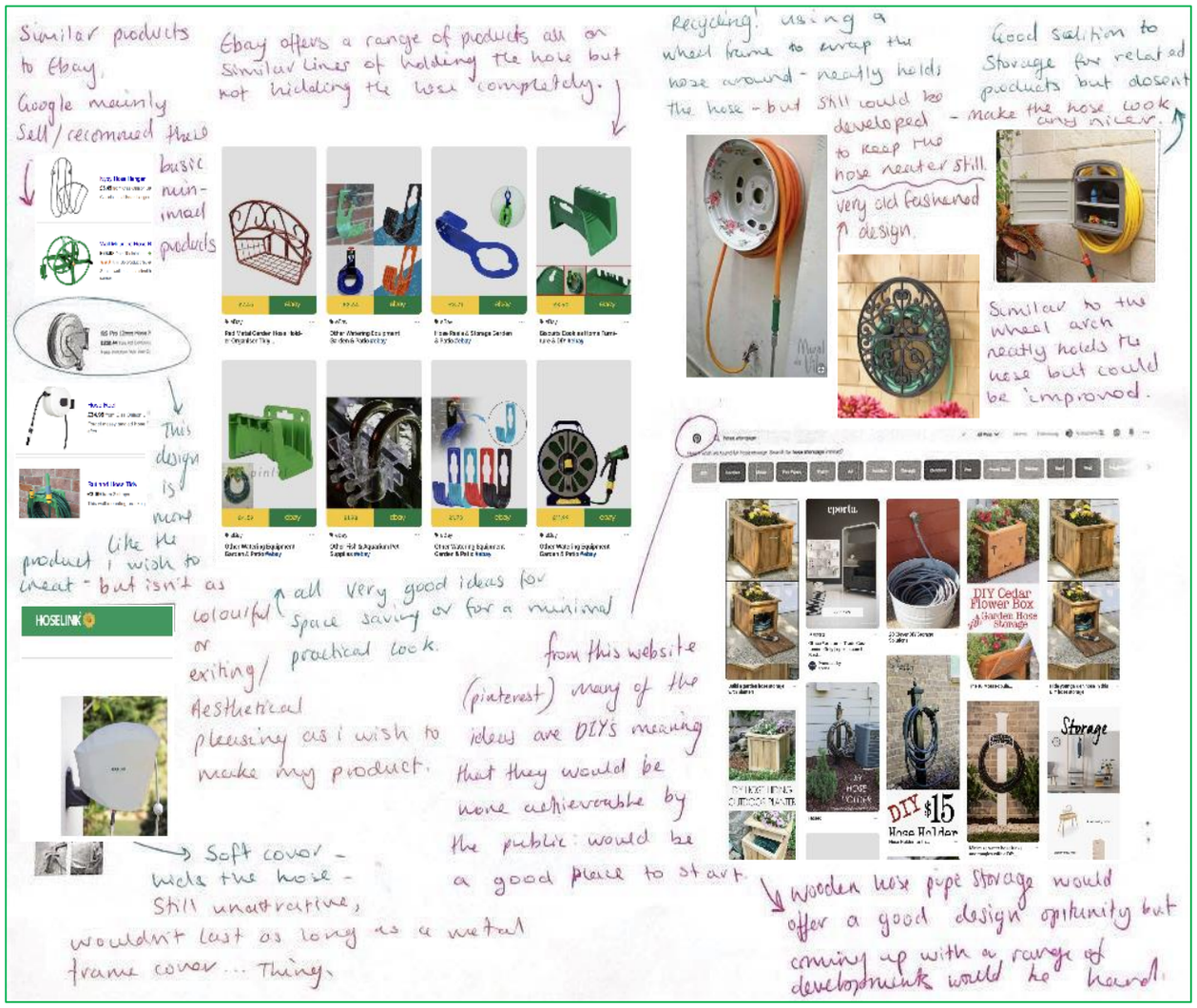
All three of these examples are made from a high grade industrial plastic, that doesn't not weather from the elements. It has been vacuum formed to make it light weight as most of the pieces will be hollow. In the 3rd example has a metal frame on it, which potential would lasted as long as the plastic main structure as it can become rusty if left outside in the rain to long.

Quality of manufacturing

As each of these are priced at different amounts, the quality of the finally product is different. The 3rd example is the cheapest product and the quality of manufacturing is lower then the other two. There is less detail and less material has been used, compared to the fist example which is the most expensive and visually looks better quality, as I didn't get to look inside, I have to go off of what I can see not how it works.

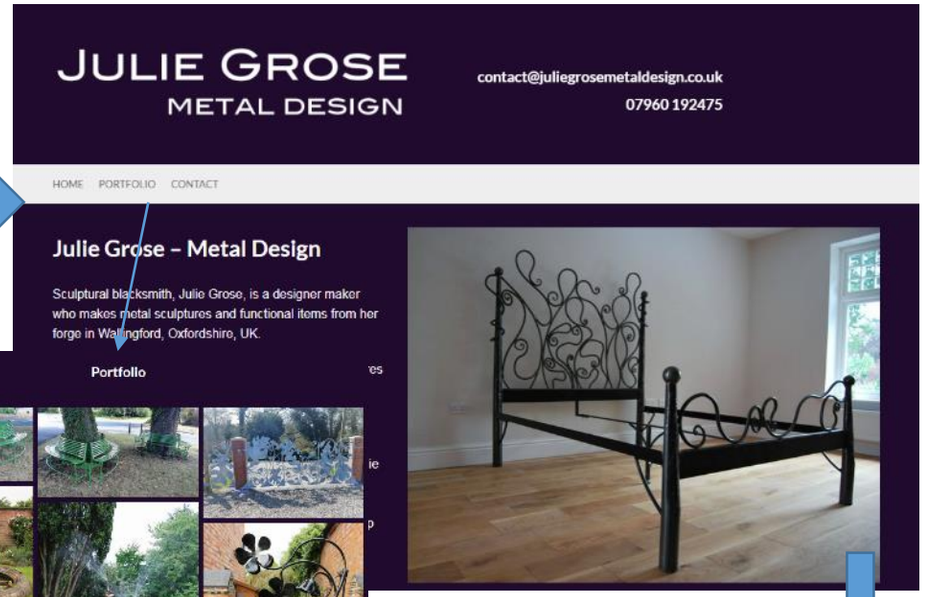
Here I am looking at a wall attachment hose pipe reel contain that has a retractable hose. The cover is made from a strong plastic which is coloured, but the reel is still ugly and unattractive



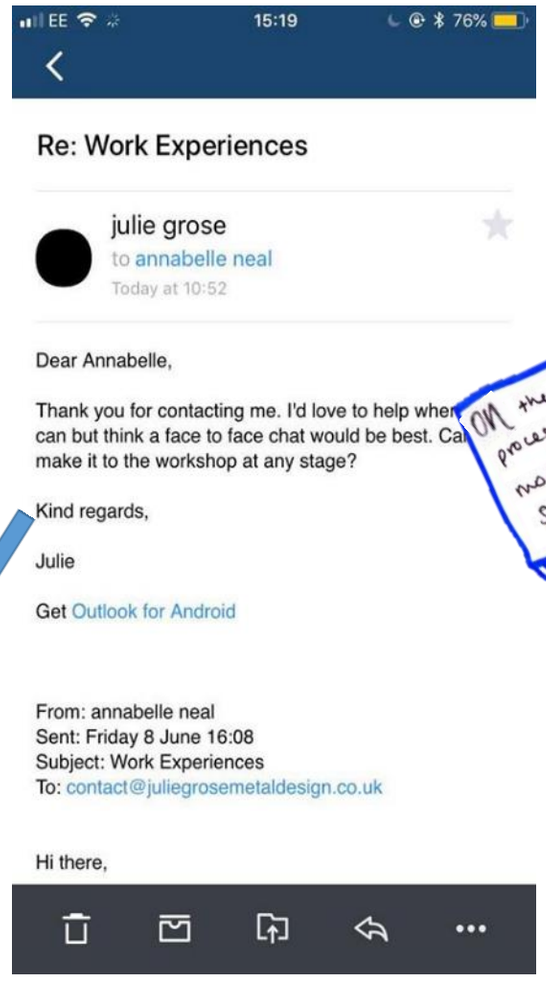


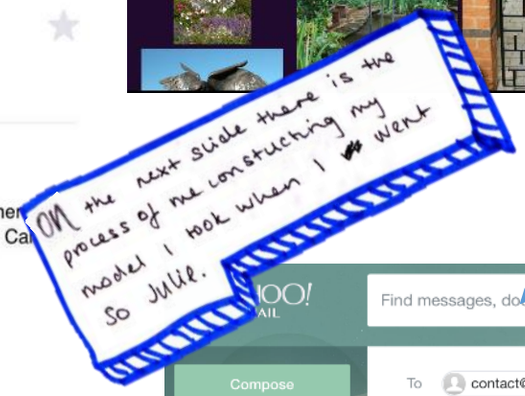
Introduction to stakeholder

Through out my project I would like to be able to contact a some what profession that I can ask question to and get their opinion on the development and the making process of my product.
As its art week, I have taken the opportunity to find a local blacksmith who might be able to help me out.
From this I found the contact details for Julie Grose, a metal design expert.
From this I chose to investigate into her work before contacting her.

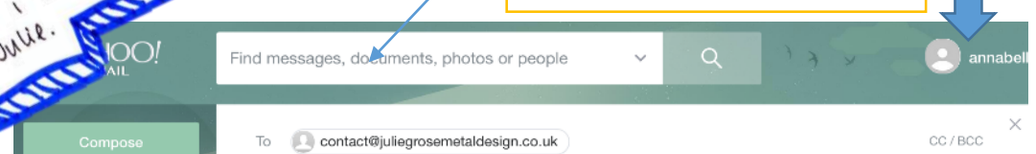


Once I received a response email, I proceed to email her back and arranged to meet her on the 21st of June that in about 2 weeks – within this period I need to finish and finalise my design and create some more models – maybe a to scale model? – of something along the lines of what I'm wanting to make.



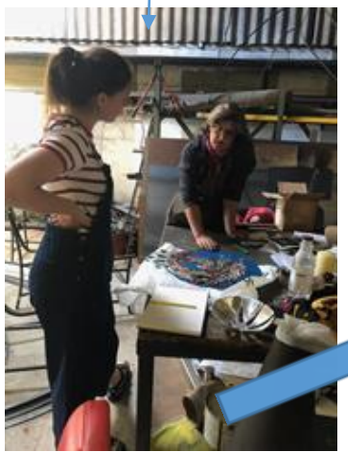


After looking at her website, I really liked her work and decided that I would contact her and see if she would be interested in working will me, helping me develop me designs and to produce a final design and model



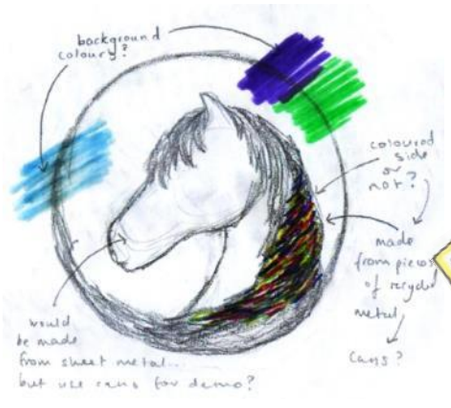
If possible I'd like to take my client with me when I go to Julies so they can meet and have direct contact so Julie can understand what I'm trying to create for my client and she can rely how we can do that and how we can do it.
As this opportunities might be a one off, I need to make sure I cover everything I need to ask in one sitting, to make sure of this, I need to write a list of question I want to ask.

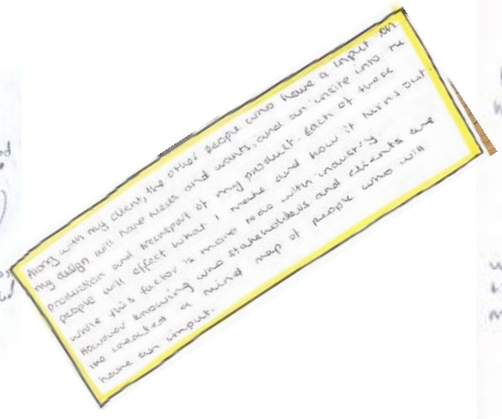
After talking for a while, exchanging details and arranging a date to meet, I went to Julies workshop located in am industrial estate in Nuffield.



Before going to Julies I wanted to create a 3D to scale model of what me and my client were thinking. Showing the size I'm working with and what kind of facial design would be going on.

Here is the design I did for this model I made





Making my model for the blacksmith

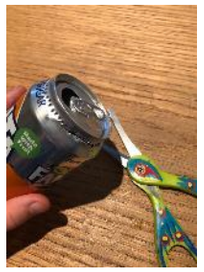
Overall, this model took me 2 days to make, including drying time for the pain and glue.

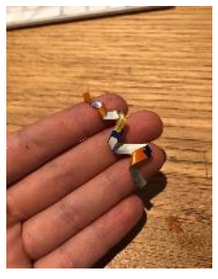
I choses to use hot glue for this model as it is a quick drying semi-permanent way to connect mixed materials together.

- This model will be used for two thinks, to show my client what the final idea looks like and to show the blacksmith, Julie, what mine and my clients final thoughts are, and to see whether that would be possible and what materials she recommendations.

- Using a 30cm radius cardboard circle cut from a old cardboard box, I papier-mache the circle twice then allowed sufficient time for it to dry to avoid any bubbling in the new layer.
- Secondly, I coated the dried circle in a Blue paint to help the aluminium cans pop out, and the shape to become clear and universal. The paint layer was a mixture of PVA, blue, white and purple paint.
- From there I collected an arrange of soda cans then washing them out as I though they would be the best way to interpret the pop of colour and the relief.
- After washing the cans out, I took a drawing pin to poke holes all around the the top of the can to make it easier to cut with a knife/scissors once the tops been taken off a cut down the side of the can and around the base of the can being carful not to cut myself.
- Once cut open, the thin pieces of sheet metal would then be cut up into smaller pieces depending on what it was meant for..
  - Really small thin pieces which would be used to create the main
  - Or random sizes ranging between 2.5cm - 0.5cm in width which may be cut at different angles to create different demotions and angles.
- Using a hot glue gun, as the model is only a prototype, I stuck the pieces of can down, starting from the bottom of the neck moving up, to create over lapping, then moving on the the main, finishing with the final detail, the eye.
- The eye was made in the same method as the pieces of can apart from the piece were cut to size and layered together, and then, stuck on.

When making the model, I was cutting metal with scissors which left the metal raggied and sharp – this was a hazard that coursed small cuts, and could have been avoided by wearing thick gloves.





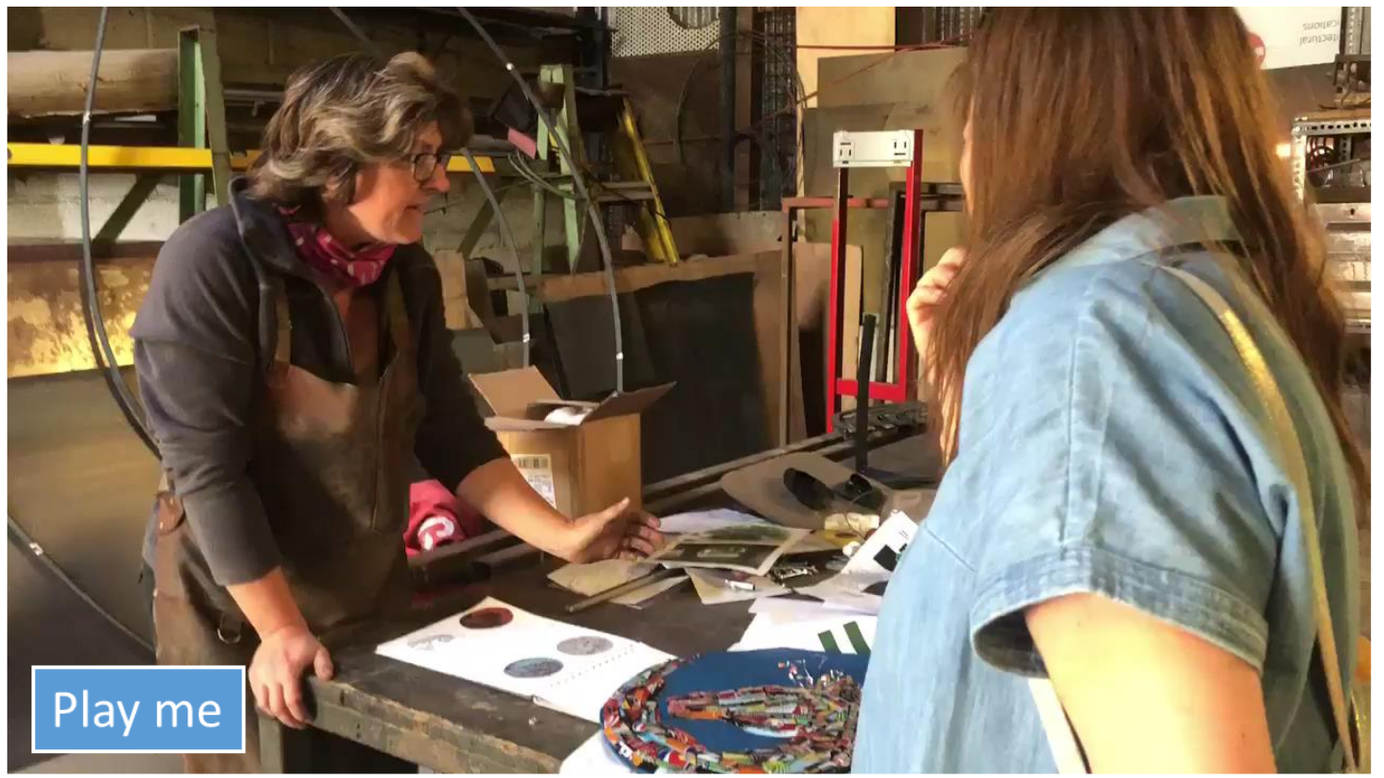
Meeting the stakeholder – The blacksmith

To meet Julie I prepared a model and folder of my designs and work so she could be what my idea and concept was as well as potentially giving me some feedback and her thoughts. I also brought with me, my client so she could be their to ask questions and to hear, 1st hand what Julie suggested for materials and other areas.

After showing Julie my idea, and explaining to her how I though it would work, She gave me some really good feedback. She helped push me in the right direction with what materials I should or could use and gave me some samples to go away and think about, as well as pointing out areas I had not thought of myself in my design work, like what if the hose pipe has a handle on? Areas like this that she pointed out were useful for me as I can now go away and change and develop my concept. Having my client there meant we could talk together about how we could avoid such issues and how we could amend my design to work with these types of hose pipes as well.

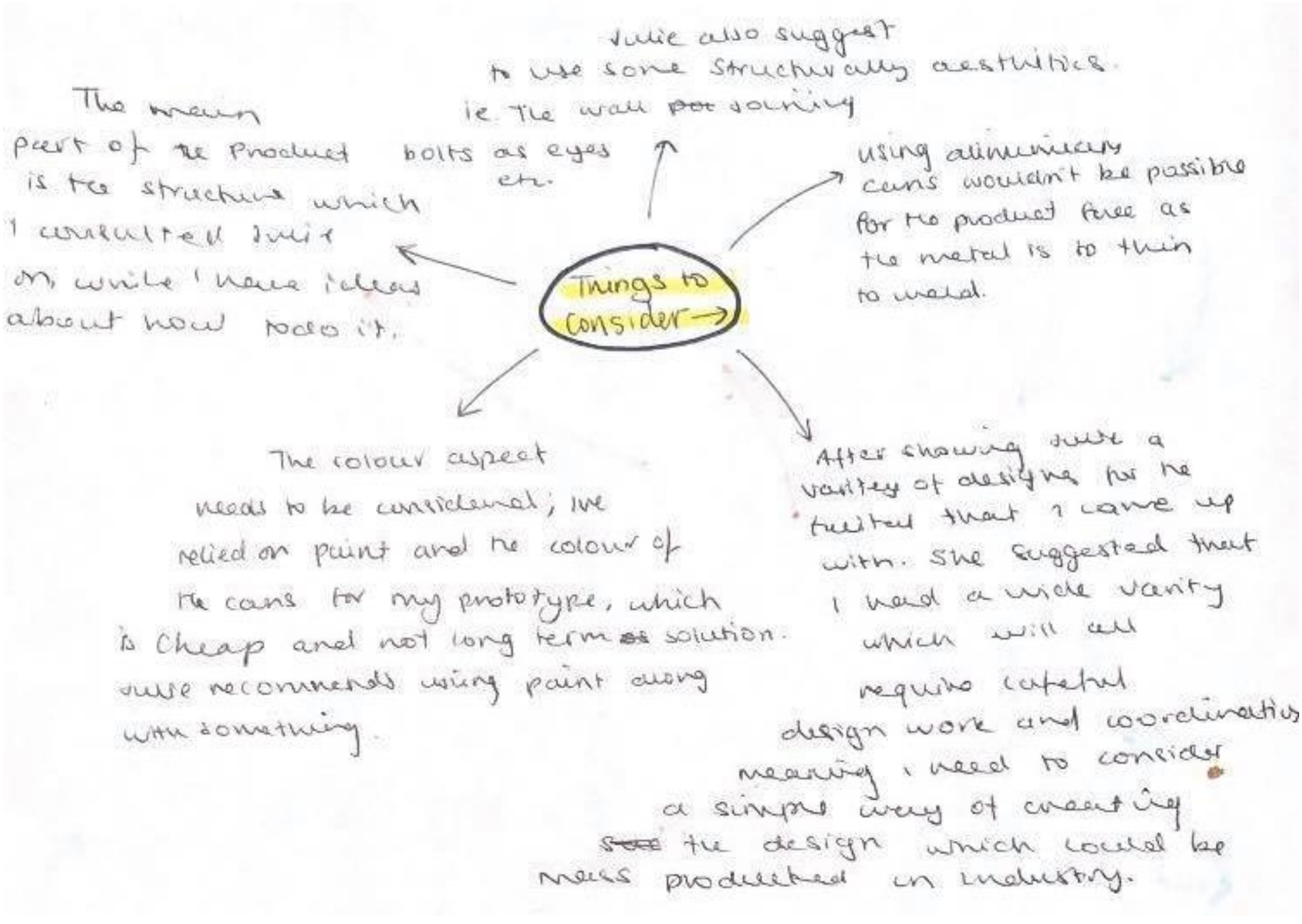
Inspired by my idea to use recycled material where possible, Julie said using pieces of metal like cans could be hard to weld on which would increase the time one cover would be worked on, and therefore increasing the value of the product. This means my market becomes niece as it will only suit a range of people. This is an areas I should consider after completing my project, looking into the future, as I would not be able to mass produce these designs.

While there, also talked about finishes for the metals and cost around the different methods. The easier and cheapest opinion would just be to let it rust as once the metal has rusted, it stay very strong for up to 10 years before it stares eroding. Other methods include painting the metal, which in my opinion makes the product look clumsy and unprofessional but is also a cheap option and a good way to get colour onto the produce. Other methods include coating the metal with a zine powder coat which makes in all weather officiant and glazing the initial product which will add stabilities but would be expensive.



Moving forward…

After visiting Julie, she gave me lots of things to thing about, redesign and to tell my client, here are a few notes I took to help prompt what I didn't to do



Face developments

This design would be made with more traditional, blacksmith methods, hammering the picture into a metal sheet. - Would have to be a niche product due to the 'one off' nature of production.

Stamped in - would require expert/out of school help.

Multiple be made from cheap meta... (copper)

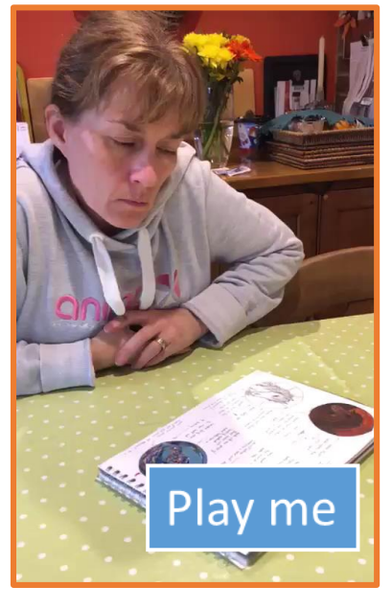
Here's a digital drawing of a development of the blue, multicolour horses design. I would use many pieces of silver metal, layered up to give of a metallic effect.

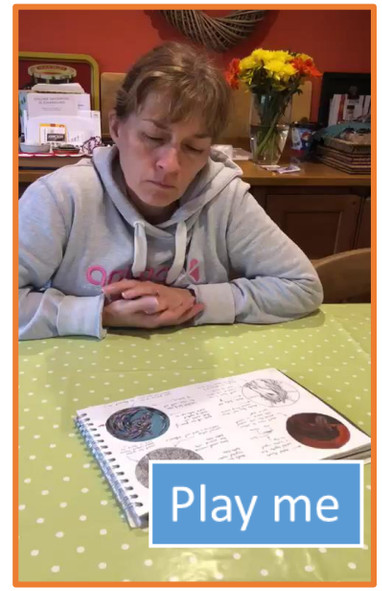
metal wire welded onto the sheet form metal

basic - welding on wire

This model is made using a 3D pen - The horses head is made with plastic

Here's a similar model to the design but without any colour. Its made from small pieces of an old coke can.





metal sheets welded together then a horse layed on top.

hair

base horse

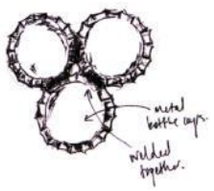
Made with one piece of sheet metal with loads of squished metal bottle caps on

Curved, full of colour... the colour would end up finding

would give the pieces texture and give some 3D element to it.

This design was also used when showing an example to the blacksmith

This is my favourite design as I feel it creates the most sculptural appeal to the model. Although this design might become a safety hazard due to the pieces not being fully stuck down.



(different construction methods)

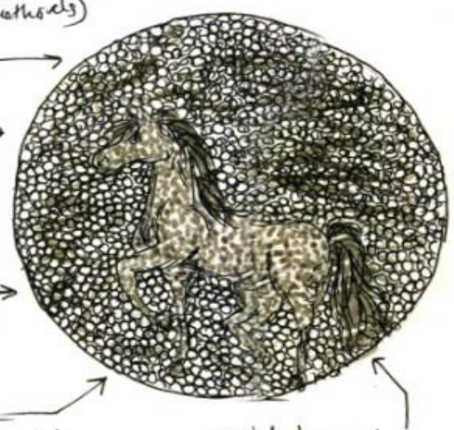
3D elements

Made from recycled metal bottle lids.

horse raised then covered with bottle lids.

colours? either natural + bold and different

would be quite brittal unless there was a back to it.



Made from dust sized coated Scrap metal

Make fully 3D

would have to be coated with some sort of finish.

Maybe to clinical if I was to keep just silver

This design would be made by thin pieces of metal welded together

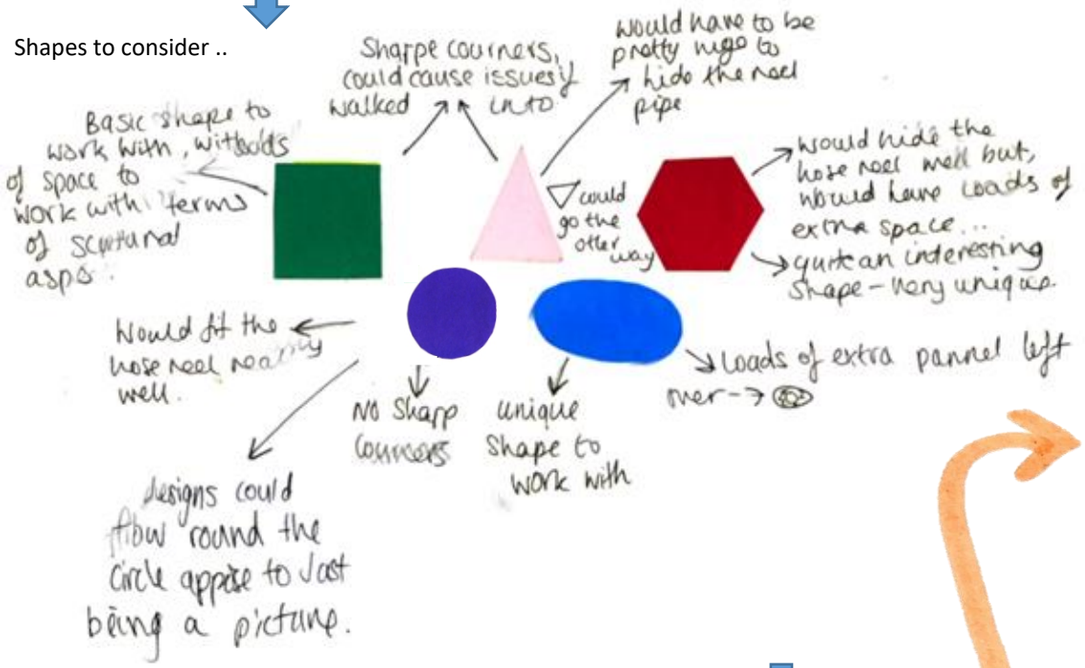
This design would be created by welding together many metal bottle caps - good use of a waste material... although the creation will become weak.

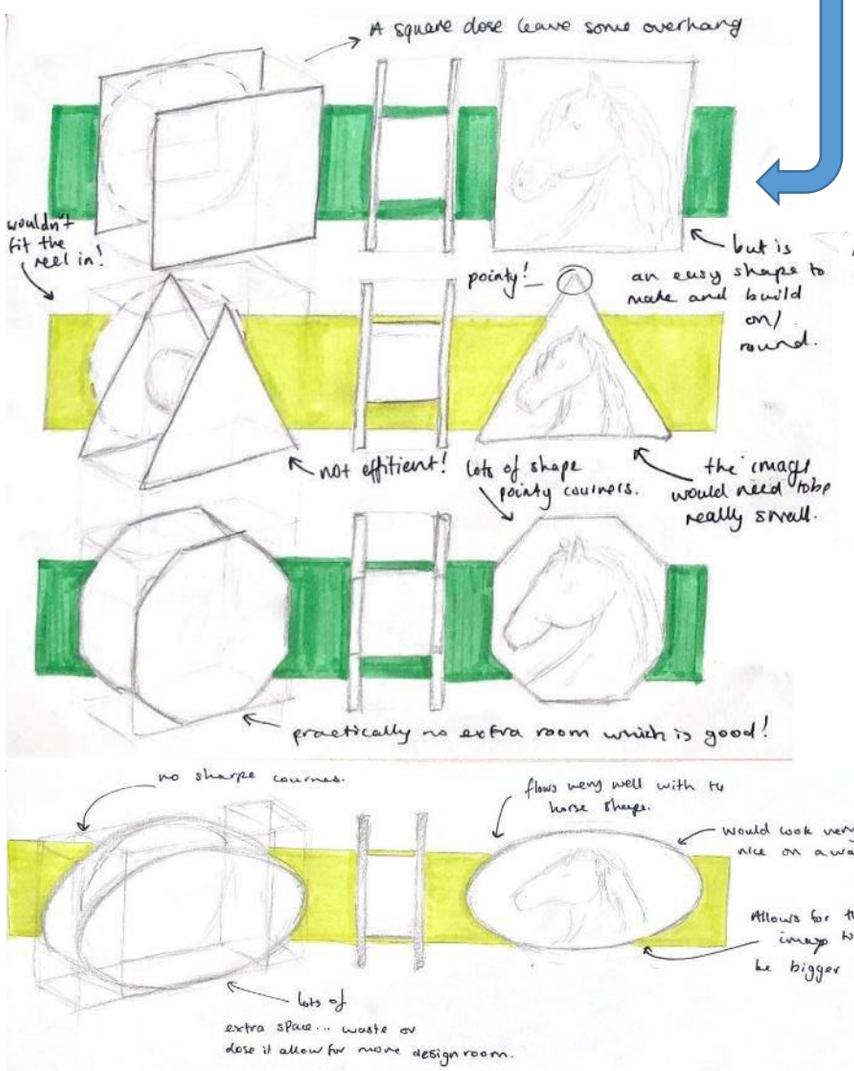
Here is a brooch I found in a antiques shop in Hungerford – the design is made up of pieces of resin that have been coloured and has had a pearlescent finish added to it.

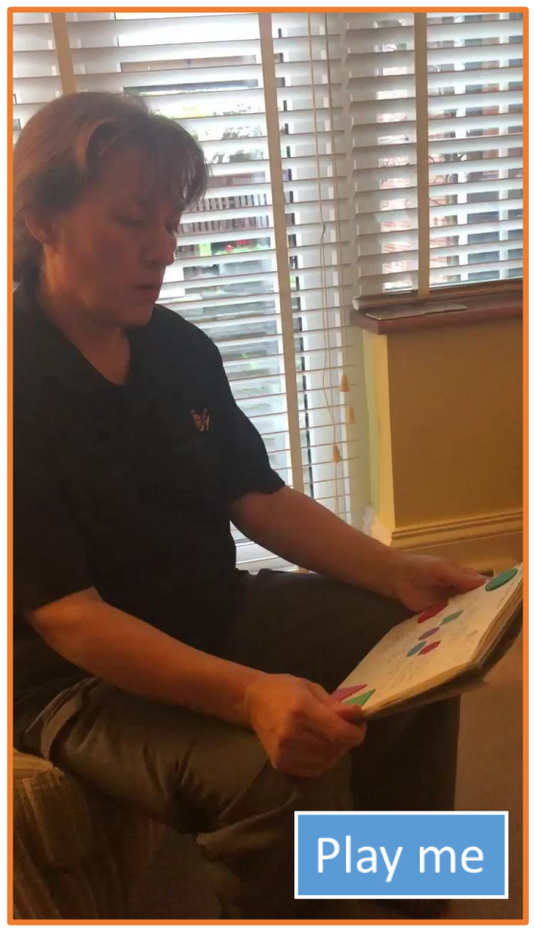
Shape Development

While Julie didn't mention anything about changing the shape of my cover, My client wanted to see what some other shapes would look like as the cover. To do this I started out by brainstorming some shapes and pointing out areas of advantages and disadvantage, then turning these shapes into a basic design for a cover then testing them with little mock up models and finally, getting feedback from my client

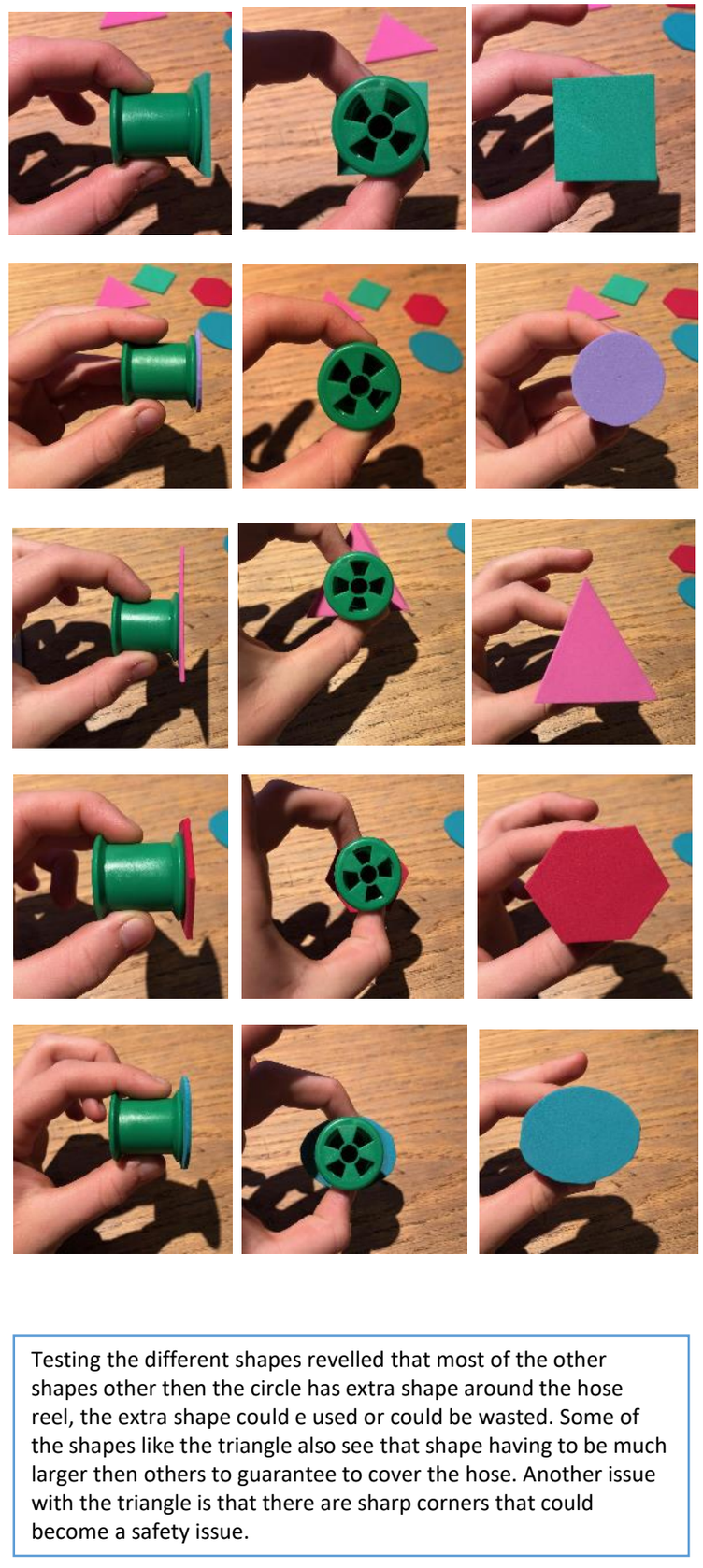
Shapes to consider ..







overall, while Amanda did like the idea of the other shapes; like the oval, she agrees with my instinked that the circle would be the most suitable shape.

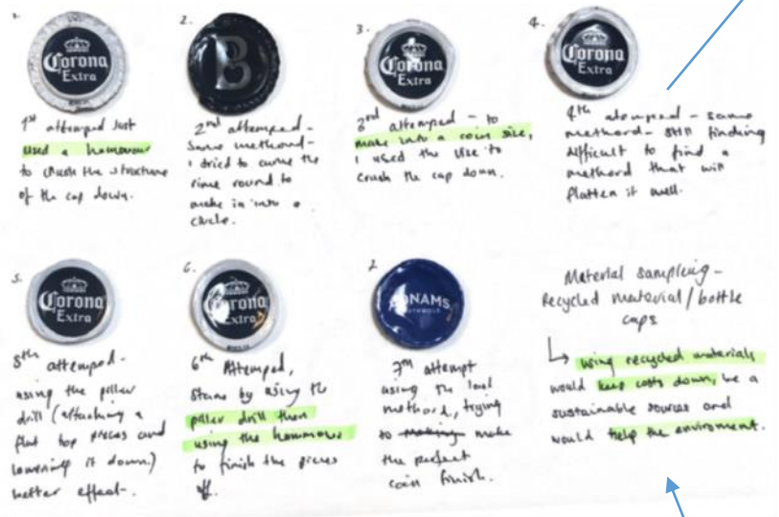


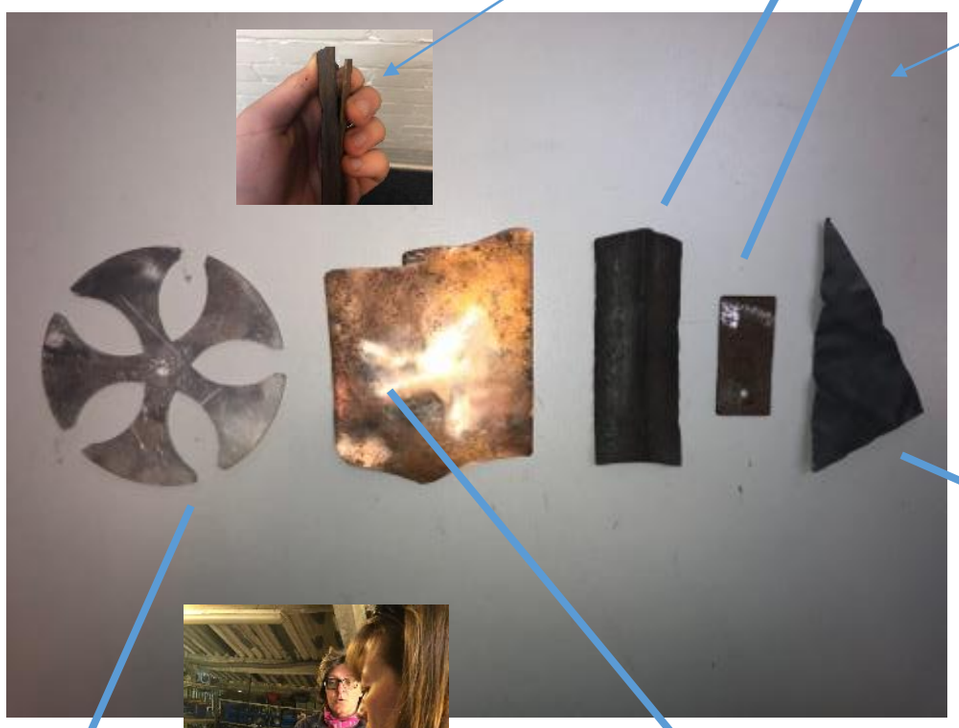
Testing the different shapes revelled that most of the other shapes other then the circle has extra shape around the hose reel, the extra shape could e used or could be wasted. Some of the shapes like the triangle also see that shape having to be much larger then others to guarantee to cover the hose. Another issue with the triangle is that there are sharp corners that could become a safety issue.

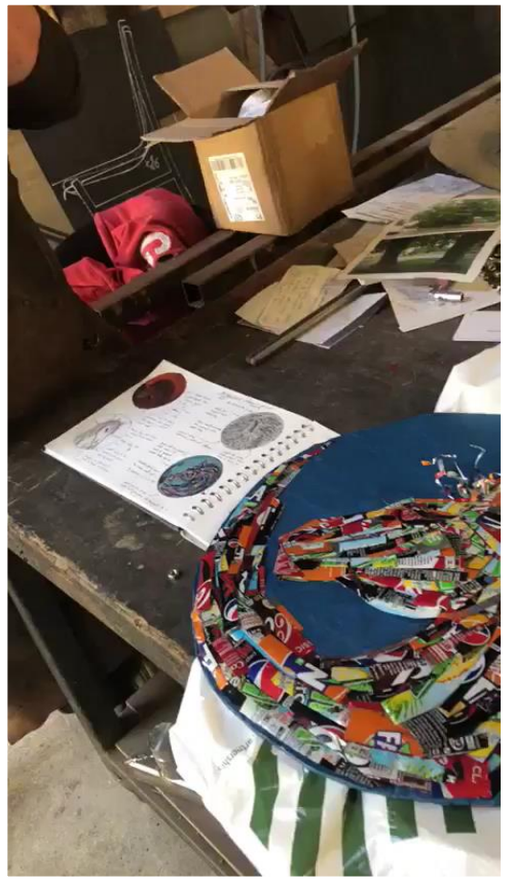
Material Development

Visiting the Blacksmith gave me a better understanding of what materials are out there and what is appropriate to use, considering the amount required and what id be asking the material to do. Julie gave me some samples of the materials I may choose to use including, aluminium, copper, mild steel and lead.

Both of these samples are mild steel. As seen in this example the thickness of this metal can range from 3mm to 7mm. While it is very good for structures and bases for projects, the material reacts badly to the elements as it easily and quickly rusts. The metal is also very heavy and hard to keep in good condition While it can be shaped and textured easily. I will not be using it.







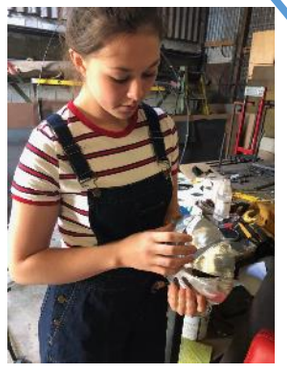
Play me

After telling Julie recycled materials is also a route I want to introduce into my project, we discussed the use of repurposing household objects including metal bottle caps, saying if I were to squish them they could be welded together to make the head of the horse. While welding single bits together would make the structure weak it would be repurposing a common throw away item. Layering the pieces is also an option, but I feel that would give it a scale like appearance.

Above is a 7 step process I recorded of attempts to find a suitable method to flatten metal bottle caps. I tried using hammers, pillar drills and other methods but found a secularly method around getting the perfect 'squish' by using the clap on a work bench.

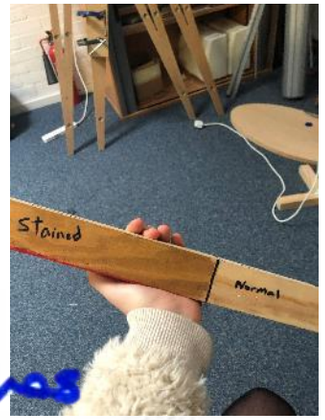
As well as metals that are structurally key, Julie suggested using more pliable metals to add texture to the horse face. While the material. Is costly and is not treated can course huge health and safety issues the marital does offer many benefits when modelling it. Its durable, and soft, and while it keeps its shape, it will bend and flatten if it needs to, very unlikely to cause anyone any physical injury

Aluminium, mainly used for soft drink cans, comes in a range of thickness and can be finished in a multitude of ways. Including buffed, painted, printed on, rust or a finishing coat of zinc that can help keep the material in best condition for longer.
As seen the photos below, Julie is using this metal to make a project, taking some aluminium sheets and hammering them to give them texture then bending and shaping them into flower like designs, in different sizes, ready to be welded together and bent for outside garden decorations. Aluminium is a cheap to get, depending on the thickness required, but this is the case for most metals. The metal is light weight and easy to obtain and would be good for the job.

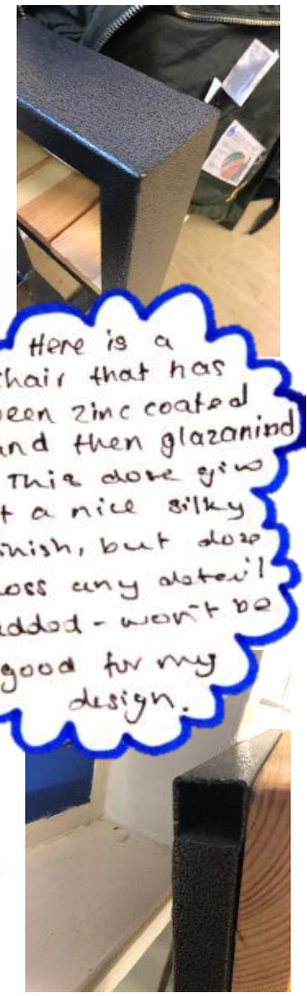


Copper is a common metal used mainly for pipe works and pluming in houses. There material is also expensive but can be manipulated in its finish, meaning it could be left, made shiny even painted a colour. Copper can also me moulded and welded to other pieces to create shapes and bends. Its durable but overtime can become weak, especially if it is moved when cold and harden often. The edges can become very shape if left raw, but can be sanded away to leave a smooth edge.

Finishes



Examples of finishes on wood →



Here is a chair that has been zinc coated and then glazanind - This does give it a nice silky finish, but does loss any detail added - won't be good for my design.

wood

- wax
  - not meant for pieces like this
  - natural, environmental approach
  - can add colour
  - looks nice
- paint
  - adds colour but not meant to go outside
- Varnish
  - adds colour, nice finish
  - doesn't really protect but amends any faults privately

metal

- glazanising
  - don't normal do one without the other, look design ensity, expensive, boring colours
- zinc powerding
- Resin + wax
  - natural design
  - doesn't add any colour
  - can be expensive
- paint
  - would need replying ever so often
  - wouldn't peel over time - doing outside doesn't help
  - due to the paint peeling would need to be non-toxic
- Rust
  - natural way
  - good for soil
  - wouldn't last very long
  - would ruin design

resin/plastic

- leave
  - can leave it alone
  - easy, cheap method
  - makes it more vunerable to breakages
- Solient
  - keeps everything together
  - can be coloured
- paint
  - will peel
  - cheap
  - not great for the environment.

As im planning to use metal i feel using something like glalvanising as its the easiest process to do, due to the connection we have at school.

Manufacturing process

This process uses a turn tables and requires the material to be placed inbetween, commonly used with wood, that is then cut deep with the a lowed blade. This promise a smooth finish, but is unable to do details and is only normally used for 3D details like legs for a table.

- turning

- plotter cutting -

used for 2D cutting, similar to a laser cutter, but doesn't use a strong laser to cut just a small blade. Large machine but cheaper starting cost. The machine is not directly available to me but would be useful as it can cut metal and add detailing.

Cam manufacturing process rely on the input of the design digitally then responds to the changes and creates the product; Cam will be useful for me as its only a prototype and this enables me to make small changes quickly

Manufacturing CAM Process

- Laser cutting - Computer aided manufa which is mainly used when creating one off products.

for my project using a laser cutter would be useful to cut out the main elements of the cover however, the laser cutter accessable at school doesn't cut metal.

- Milling - made up of 4 process all to do with creating holes and etching layers away to almost carve out the disiared shape, while we don't have a mill, but I can use the piller drill for a similar effect, but that would require a different, expensive drill pieces.

- Routing - mainly used for wood and laminate materials. appose to cutting, etches down the layers of the material and ends out the the final piece.

↳ have a router at school, only a small unit, mainly used for wood.

Router →

Die cutting -

The process of using a temp tate to cut out the net or pieces of a project - die cutting also tends to uses tessilation - the process of adding as many 'nets' on one page at once. This process is more a method of cutting. I could use this in industry but not in school

Laser Cutter →

I'm using CAM manufacturing process during my project as they are the most accessable to me, they also allow for any quick changes or alteration to my designs before or after cutting out modles/RUNS.

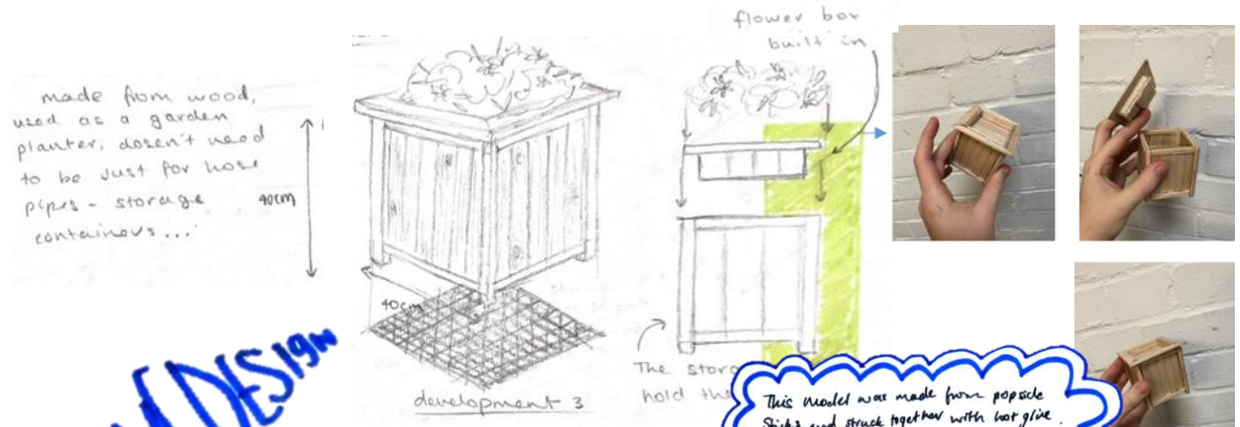
plasma cutter -

This process is similar to the laser cutter but its more advantces and meant for metal this process is the most effect for me as it has multiple functions; Cutting, etching, engraving, is a quick method to cut a clean finish metal. While I still need to shape and finish my product, choosing this product for my prototype is likely to reduce my time.

After researching into different CAM process available to me, I have decided to use the Plasma cutter as it guarentees a clean cut as well as being the best method to cut metal in general. As Wallingford school dosent own a plasma cutter, I will have to out sources the machinery. To do this I will have todo some investigation into local business and other organisation.

Development of hose cover ideas

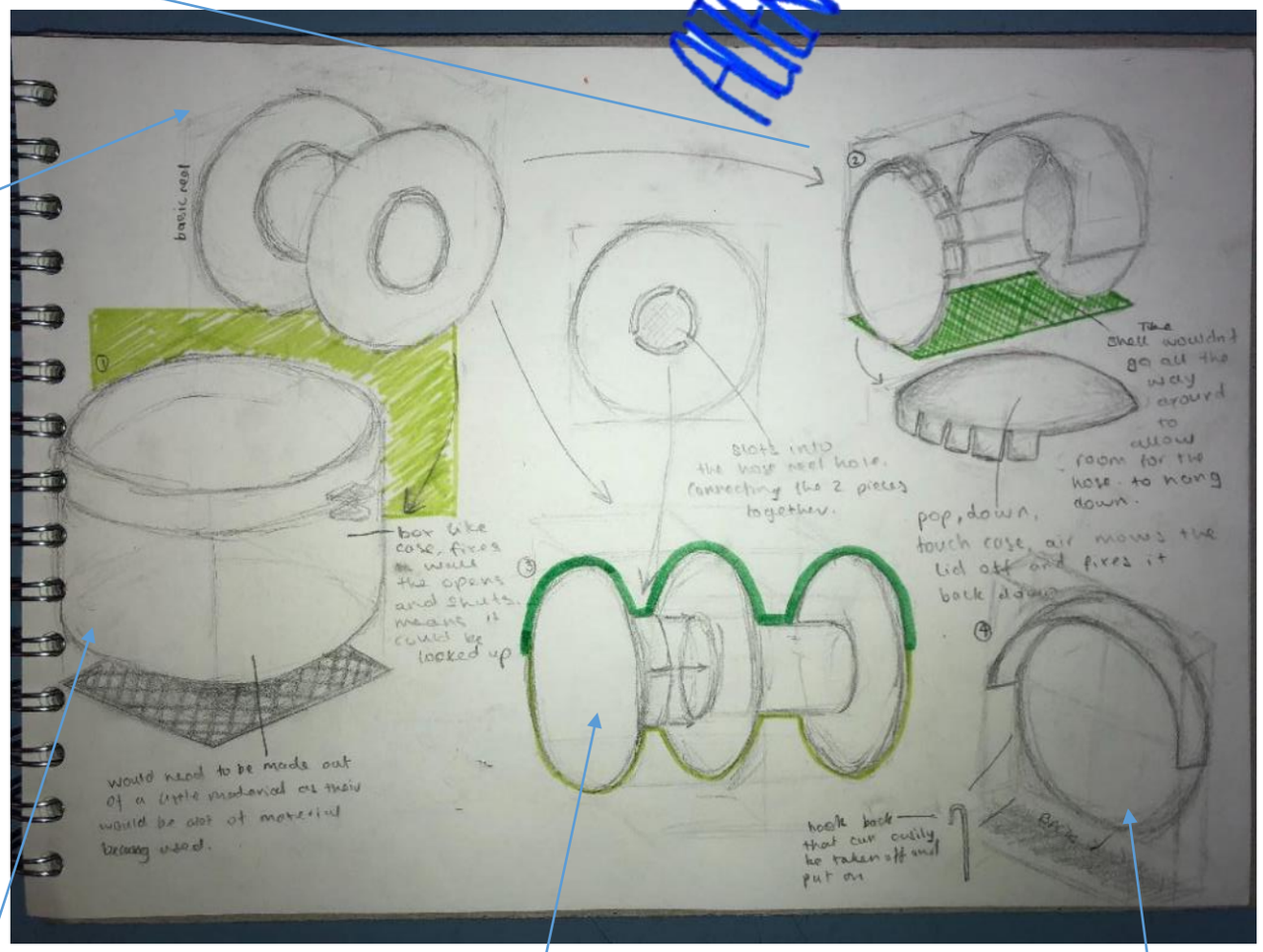
In one of Julies feedback videos, she rouse the issue of developing a suitable cover of a hose reel that has a handle. From this I researched into handled and other extended feature hose reels that may reduce my market further.
From this I came up with a serious of other designs that my help reduce the issue. Each of these show way they could cover the hose reel and avoid whatever obstacle that may be in the way.

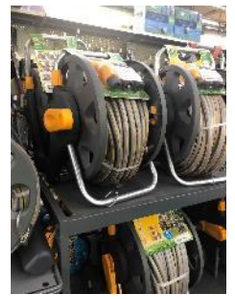


ALTERNATIVE DESIGN

Pop in and off design. Best for the reels will no handles or with small handles – easy method that does require some strength to get off but is light weight and easy to change when ever. No screws or holes needed.

Basic reel, would work with any of these designs as well as my original concept



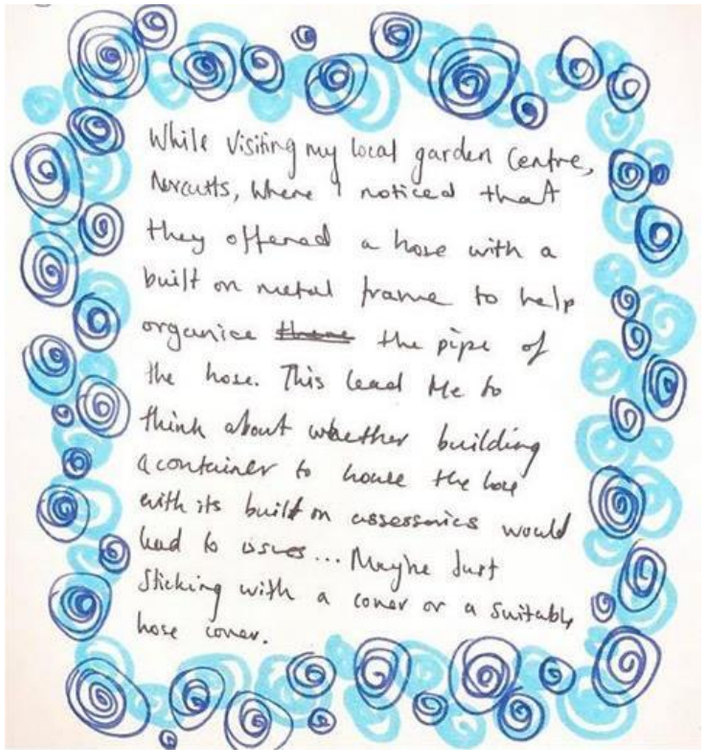


A different type of hose reel has a handle that can also be used to hang the container. The issue with making a cover with this would be, either the cover would need to consist of 2 separate metal shields or one big soft cover. Like what you get on tyres to go on the back of cars. The actual hose reel cover is similar to my case design.

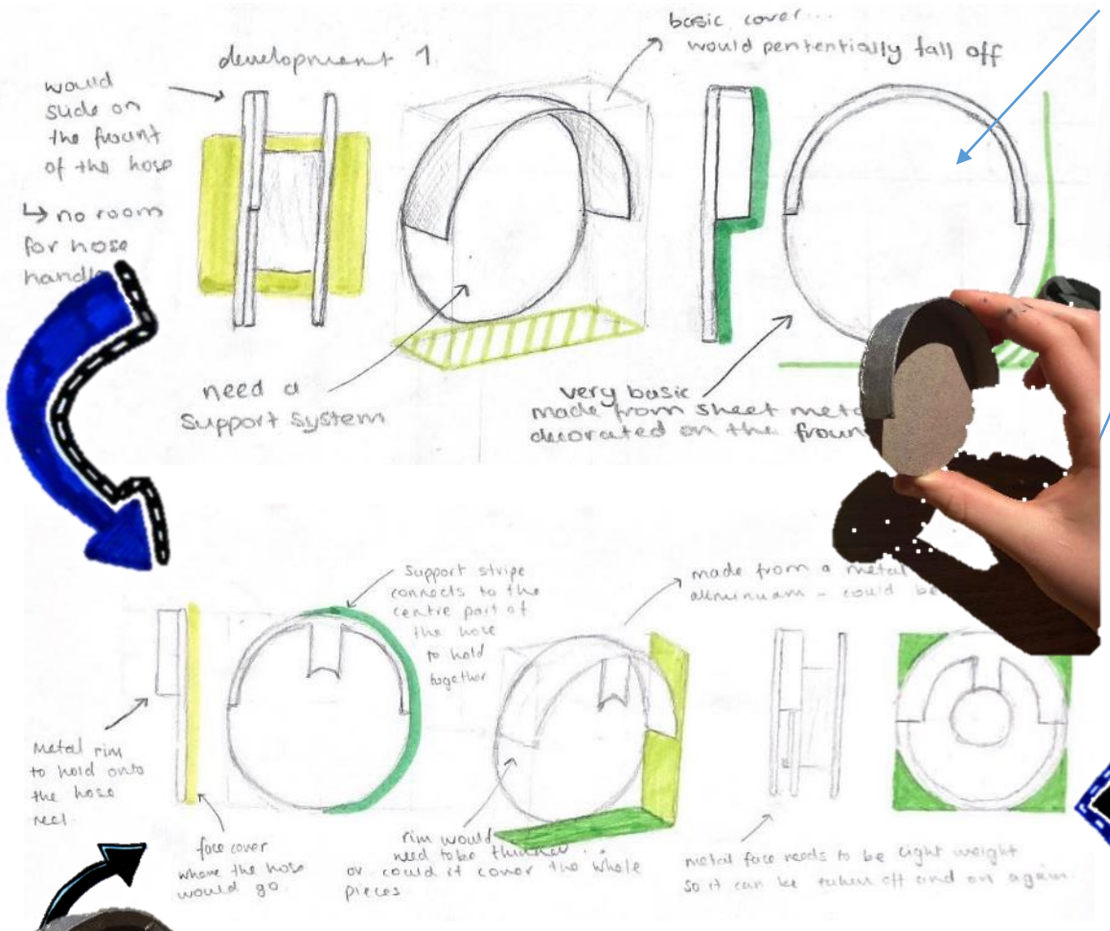
Case idea, keeps everything neatly hidden away but does take up a lot of space and could become an eye saw. The method could allow additional storage and could even be developed to allow the hose to come out of the bottom for easy pull out. Box could also have a lock on to keep positions safe and could have additional designs on around the case. While the design is a sound concept, it would require strong all fittings to be attracted to the wall and would need the hose to be attracted inside also.

Slip in cover. Using peg like connecter, the face could be easily taken off and put o, with no use for screws or holes to be drilled. The cover is similar to the pop off and off idea but would not allow or any type of handle be on the reel already. The design could add a handle to the design to turn a basic reel into a easy clean up reel.

The hanging cover design, similarly to some of the others would be light weight and easy to take off and on again and again. The area where the hose is slotted into could be extended to make room for any handles or additional parts to any hose, but will lose stability



Idea developments



idea 1.

- basic sheild, slip structure. not much protection, or purpose...? add a support pole or might roll off...? would be very light and pretty cheap

development...

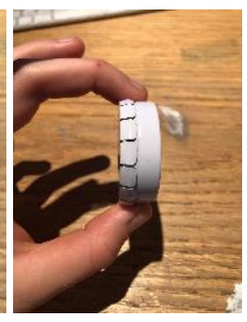
- added a support pole, but still rather weak, still light weigh and would be real cheap to create but like the first one not really going to protect the product

Here is a model I made to show an example product... I found the more detail - 3D details you added the harder it is to close the tin.

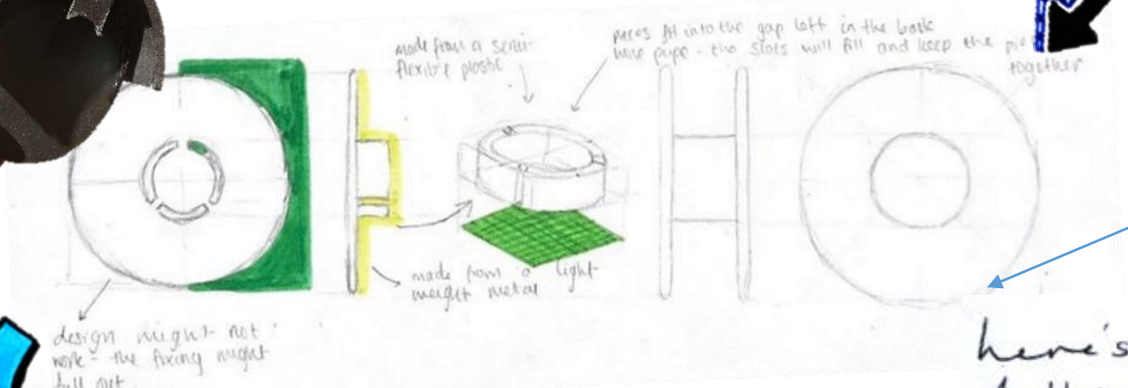
What Next?

On my next design page, I such focus on designing a more structurally sound product, appose to just a cover – something that could encases the reel instead of rest on it.

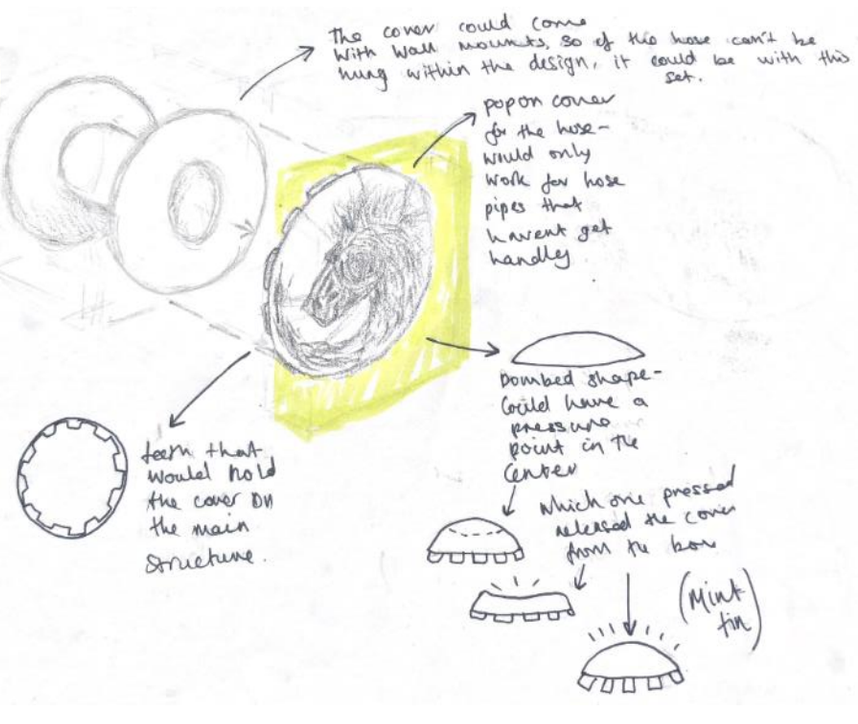
My pop off - pop on design was based on this mint tin I found and thought could offer a suitable solution to hang my hose reel cap.

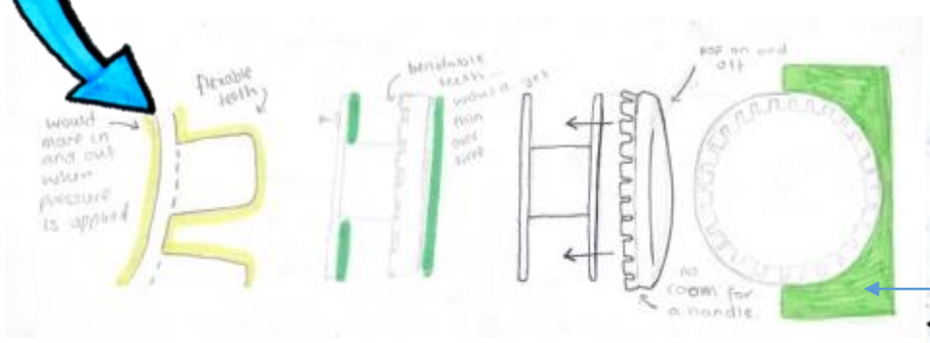


another development for this design would be create a more structural sound support - an interlocking clip style clip. - next to develop would be the protection element of the hose pipe reel.



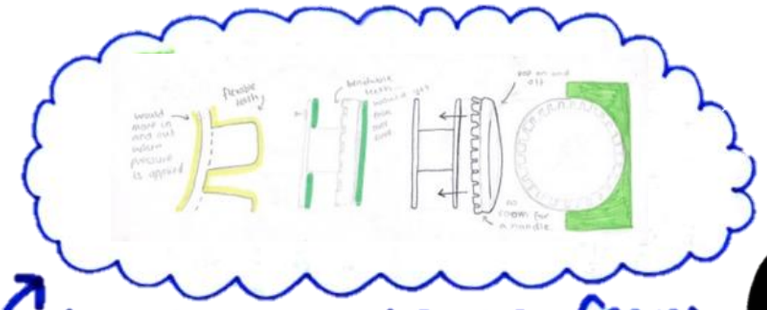
here's another drawing of this design →



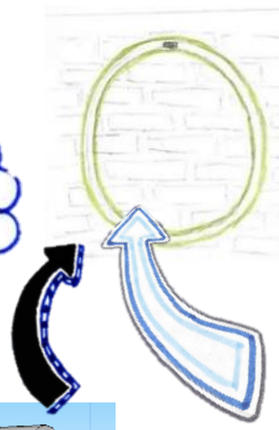


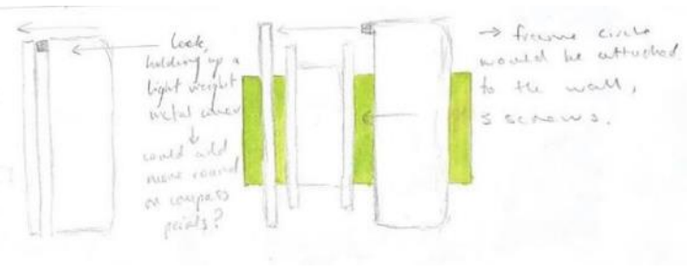
another development - although the previous design offers a suitable solution, I found another design idea that would offer a suitable ~~sss~~ sultion as well as adding a more protected solution to the sheild.

Thinking about what I've already design inspired my to change my designs up bit and to change it from a shield design to something that fully encases the product.



developments on from this design



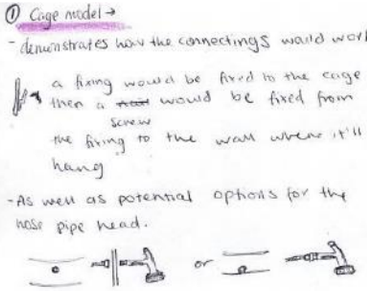


This design comes from the case design and the connecter design together which would rely on connecting a small circle onto the wall, then a case like structure on connected with a fixings.

① Cage model →
- demonstrates how the connectings would work.

a fixing would be fixed to the cage then a ~~rod~~ screw would be fixed from the fixing to the wall where it'll hang

- As well as potential options for the hose pipe head.

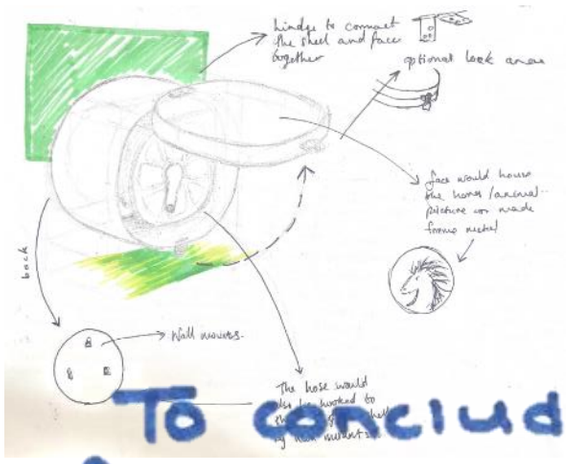


- Also brings out a few issues...
  - Joining of the lid to the container
  - How the hose ~~hooks~~ gose onto the container
  - Weight and stability.

↳ Lid locking could be fixed by using a fixings

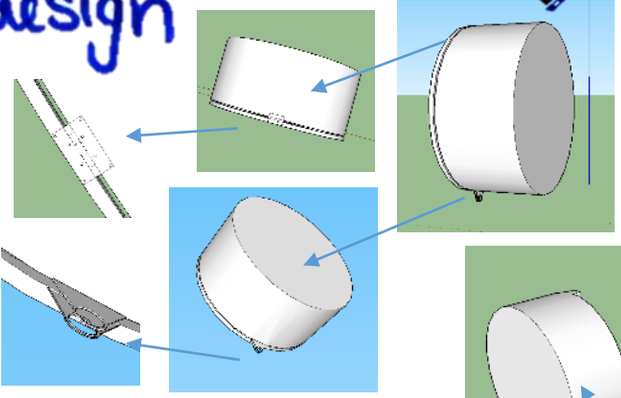
↳ A small lock type gap.

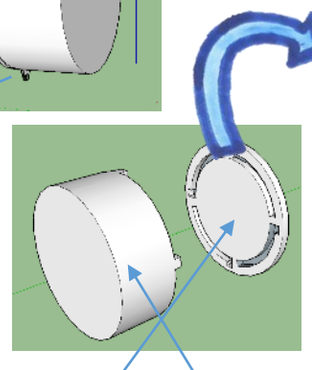
↳ fixings need to be developed



To conclude from these designs:

Overall, my designs have been developed and changed quite a few times. Changing as I find more inspiration from random objects and from 1st hand research as well as constantly considering my client. While my 'final design' on this page, my final design my differ or even be a design that is not seen to be the most appropriate, developed design.





overall this design would really on some form of fit and slide mechanism - similar of that found on tea pots, the main frame would need to be fitted on the wall, and inside it needs to be a hook for the hose pipe reel.

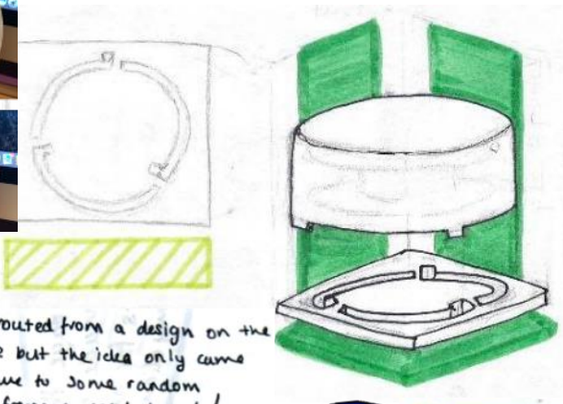
from that... the hose reel can be stored away and have a suitable, right weigh cover that will look aesthetically pleasing as well as be practical.

moving away from just casing the mount, could go all out and cover the full reel... would be very heavy, but could include storage? could be locked when away and would protect against weather.

could add a hole for the hose pipe to go through? would mean the water sources needs to be built around...

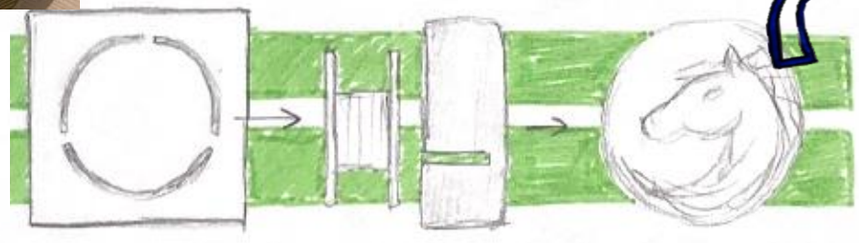
Extra design

The design could be made smaller, into a hook but you loss the design aspect.



This design routed from a design on the previous page but the idea only came to me now due to some random inspiration from a coat hook!

This design is designed to minimise the amount of metal to use and would be used instead of buying a reel then a cover, purchasing a 2-in-1 pieces.



developing this idea all I did was find a easy way to connect them both.

Things to consider before making – In school vs. in industry

Anthropometrics –

- When designing I was building the base round a appropriate size for Amanda's hose and wall space, I wasn't considering whether it was anthropometrically correct for use by an average person.
- In industry far more consideration towards the measurements would occur to make sure its comfortable for use. This could be done my measuring average recordings for hands and heights of people – for more in depth research business may choices to do research into who is most likely to use a hose pipe case and make the measurements more specific to them.

Aesthetics –

- Within my design work I have put in a lot of effort into making sure my product looks presentable, this was off of my own back and recommended by my client and my stakeholders. For example Amanda asked if I could design a variety of shapes that my case/cover could be
- Industry would work similar in the sense that if clients, customers or stakeholders found an issue with the aesthetics of a product, the company would change it if it would benefit sales.

Testing and evaluating –

- In school I am asking my peers including my client and stakeholder for feedback of developments an design my hose pipe, which is suitable for this one-off prototype of a product specifically adapted for the client. While in industry a simple process of working with a group of customers and stakeholders would be used as a reliable sources of feedback, the amount of people a company would refer to would be 100x what I've done to guarantee a large array of opinions and thoughts have be touch on and considered when designing the most suitable final outcome.
- In terms of modelling the methods I've used such as scale cardboard models would be used in industry, as well as more example models using different materials and approaches to scale to show a true representation of what it would look like – this is an easy way to highlight any issues and good parts of the model.

Materials –

- Company's in the real world are exposed to any material they want – is the most suitable as long as they can afford the manufacturing costs.
- With my work environment I am not exposed to a large variety of materials due to cost and not having the right equipment to process it - jet cutters or plasma cutter. As I am only making a proto type, I have been able to get my hands on some samples of different materials – metals, to experiment with but not enough to make model out of to test

Manufacturing –

- As I'm making a one-off product I don't have to consider how I would cater for mass or batch product, meaning I can get away with using resources that are out sourced for example, to product my model I may refer back to my blacksmith, and ask her to help me forged the pieces, while this would give me a final outcome, to do this in industry would be highly costly. Another route I could take would to use a neighbouring schools plasma cutter, while I would be getting free access to make the product id still need to pay for materials.
- Industry requires the company buying or renting the machine, the company's who buy the machinery up front only has the one out cost to coupe then overtime it will pay for itself.

Cost –

- Within a commercial scenario, cost would be considered to an extreme, researching into demand and manufacturing methods, as well as how much waste and runner costs are etc. would change everything to make the product the most effective product for customers for a reasonable price.
- In school I have not considered anything over then the cost of materials as I will not need to spend money on researching, manufacturing or any of the external cost in industry that would be considered. From material costs I've found foe the product I wish to create, metal would be the best material, while many types of metal are very expensive a charge can be save by using recycled metals for the decoration on the shield like structure.

Client –

- Now I have a series of designs I need to show to my client and stakeholders to get opinions of further developments as well ass any areas that might not work during making or that might course issues. Here my client may also choose to ask me to change elements of the design even though I feel I'm nearly finished with my design and therefore nearly done with my project.
- In industry this process would be similar as, when designing a new product for the market the developers need to be 100% sure that the item they are creating is suitable and will sell. Hitting the demands and expectations of the market.

Size –

- Industry tend to design there developments of a product to scale – a percentage of the size of the end product aim. In school I am doing a similar thing, changing depending on what material I am using and if I have enough to build a sustain size.

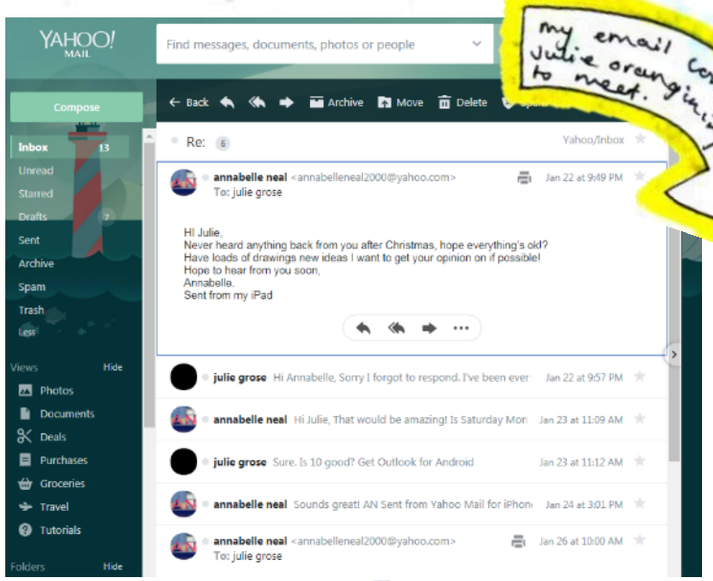
Safety -

- During the making process every company, designer, manufacture should write up a risk assessment to outline any potential hazard and issues that one may come across when designing.
- In school, I will be doing this as it will highlight any areas I need to consider any PPE or other safety methods I will need to consider, especial as I am an amateur maker.

Revisiting my stakeholder

On the 25th of January, I revisited Julie at her workshop where I showed her my 'final' design. got her opinion of what I was planning to make, and if she had any advice or chang

While Julie has been very usefully she is unable to construct the full pieces for me, but has offered help when creating the moves main and the curve of the main body.

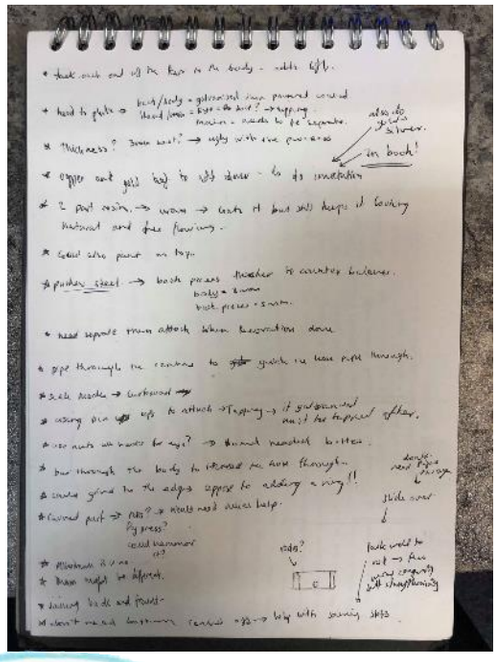


my email conversation Julie arranging to meet.

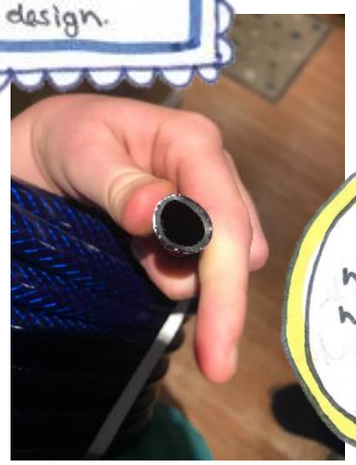
The key factors to take from my visit are as follows:

- Size is good, need to thing about balancing the product – back pieces a thicker metal then the front piece
- Where does the hose go? Adding a hole to the cover can be hung over the tap, and the hose can go up and through the hose rack.
- Colour - to add the type of colour my client wants, using paint is the best option however paint peels quickly and would need to be re applied, adding something like leaf would add key areas of colour.
- Finishes – using 2 part resin then a wax leaves the product looking natural and shows off its impurities as well as giving it a nice natural earthy colour. Is also a long lasting option that does mean I lose the detail added to it like I might if I was to galvanic the product.
- Support – Julie recommends adding support poles out of metal rods, also offers as a thing to weld off of.

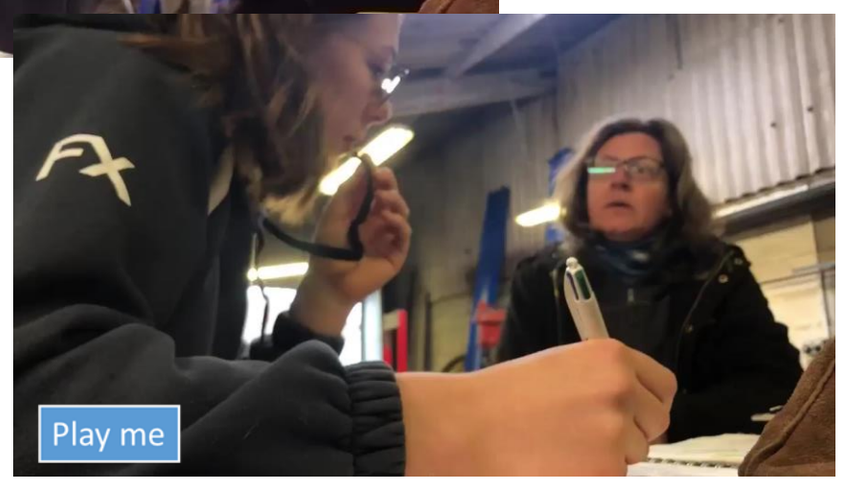
During my visit I recorded important info as well as taking notes – these are things i need to adjust, change and edit and change before getting my project cut out.



Here is the hose i will be using when the model/prototype is complete – i'm measuring the diamitor of the hose to make sure it'll fit by the new addition to the design.

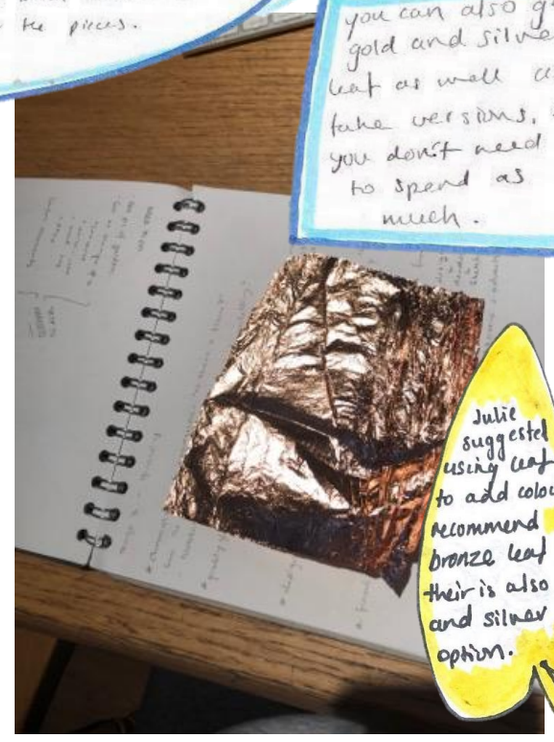


Julie also suggested having a small hole in the main body to allow the holes in.



This is copper leaf, used to add colour and value to objects without overcrowding the product. Copper leaf is applied using a brush which is gently rubbed over the pieces.

you can also get gold and silver leaf as well as fake versions, so you don't need to spend as much.



Julie suggested using leaf to add colour recommend bronze leaf but, their is also gold and silver as an option.

Final design 1

Overall I have ~~xxxxxxxxx~~ chosen this design as its simple yet effective the design incorporates the horse imagery liked by the client and the practicality required.

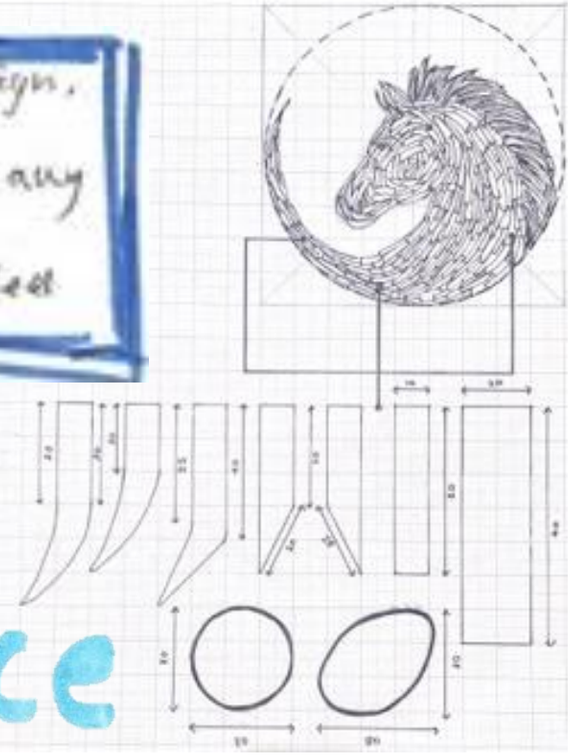
Together the face and body will be made up of hundreds of bits that will be welded together, then finished, with paint and maybe a glaze?

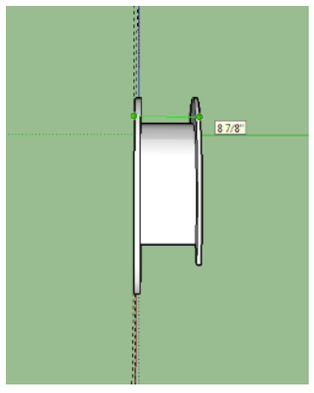
Here is a working drawing of the face to my design, getting exact measurements is hard as I want the design to feel natural and rustic, I didn't have any intention to design the pieces to build up the face but due to the design/making method I feel I might need to.

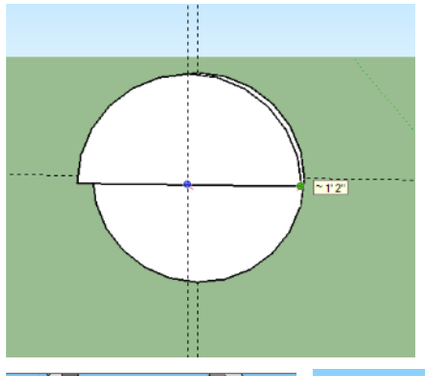
NEXT STEP=

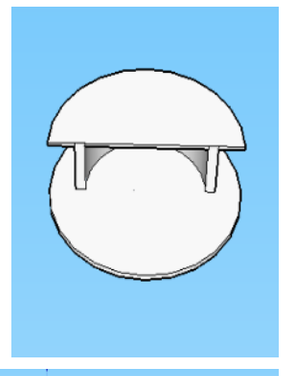
I need to consider how im going to produce my project, I believe using a plasma cutter would be the best option however couldn't add natural 3D elements this way- could as well to help make elements

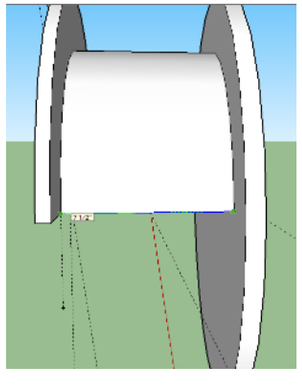
Face

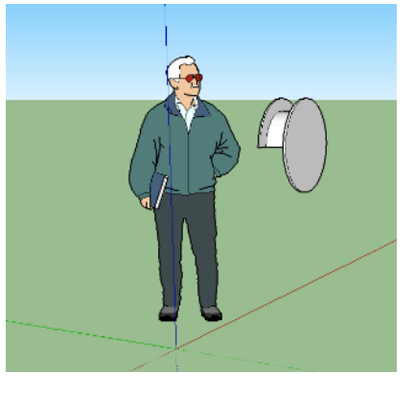






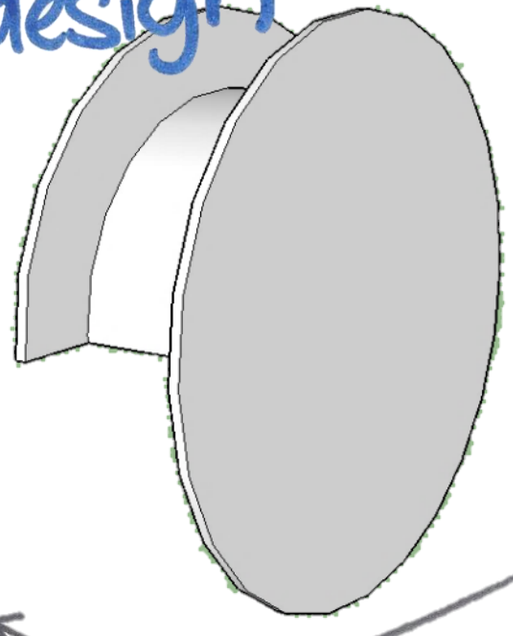


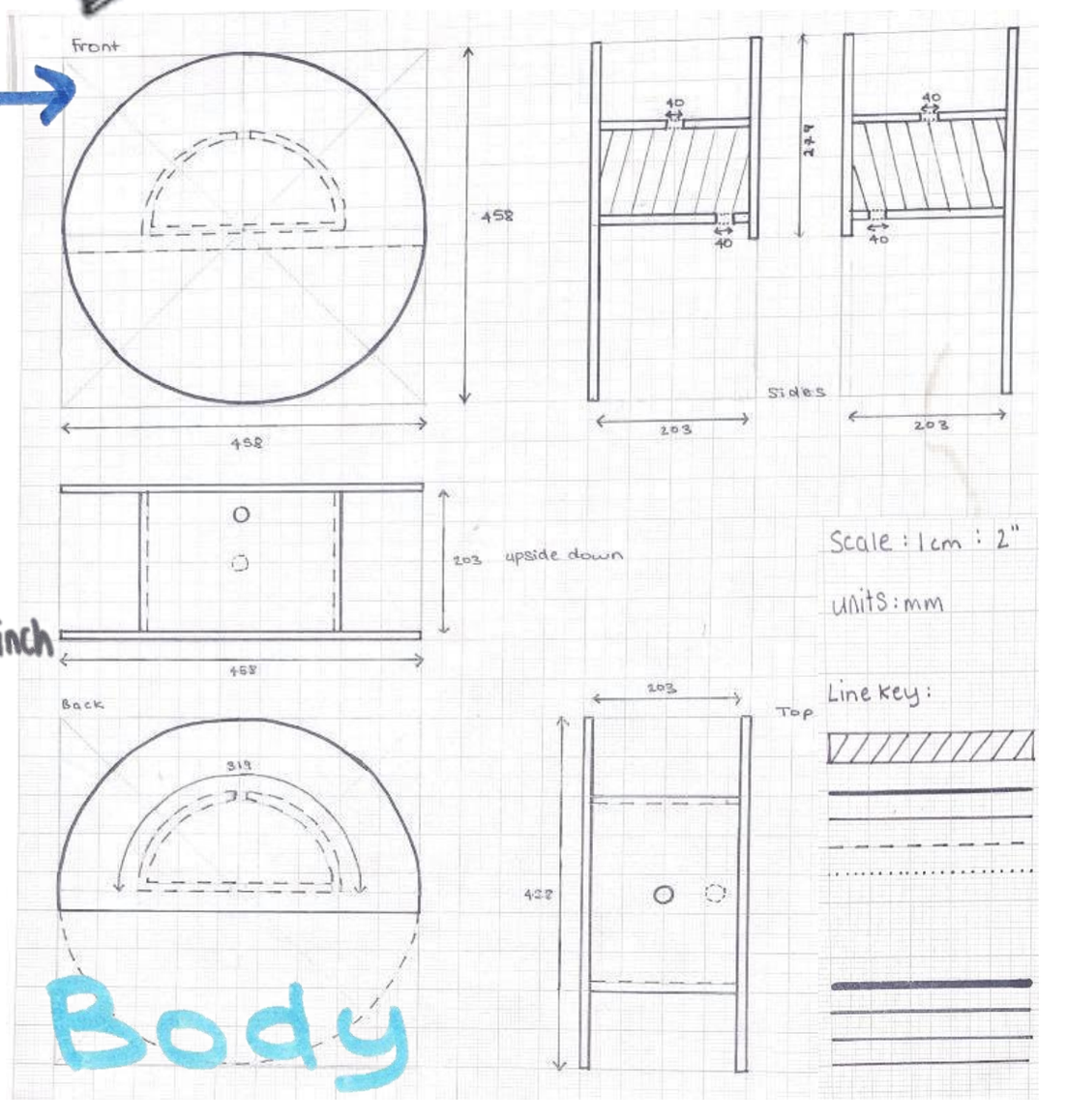




Working drawing

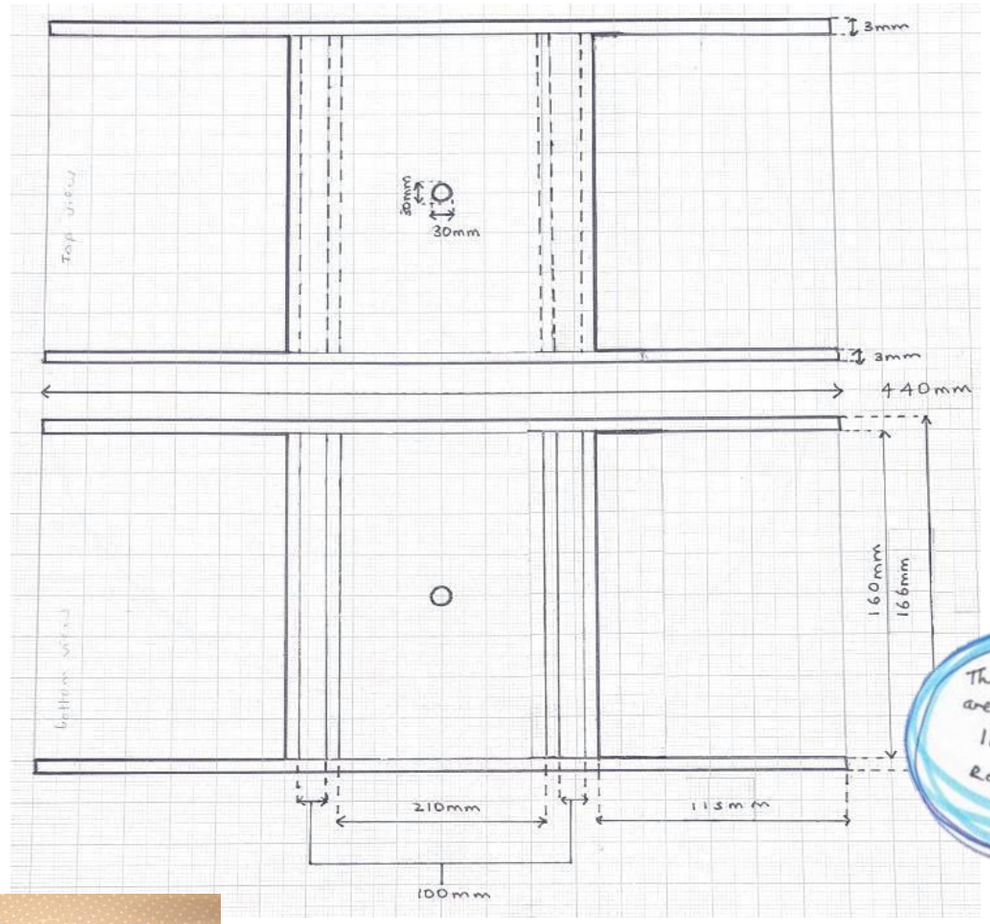
CAM design

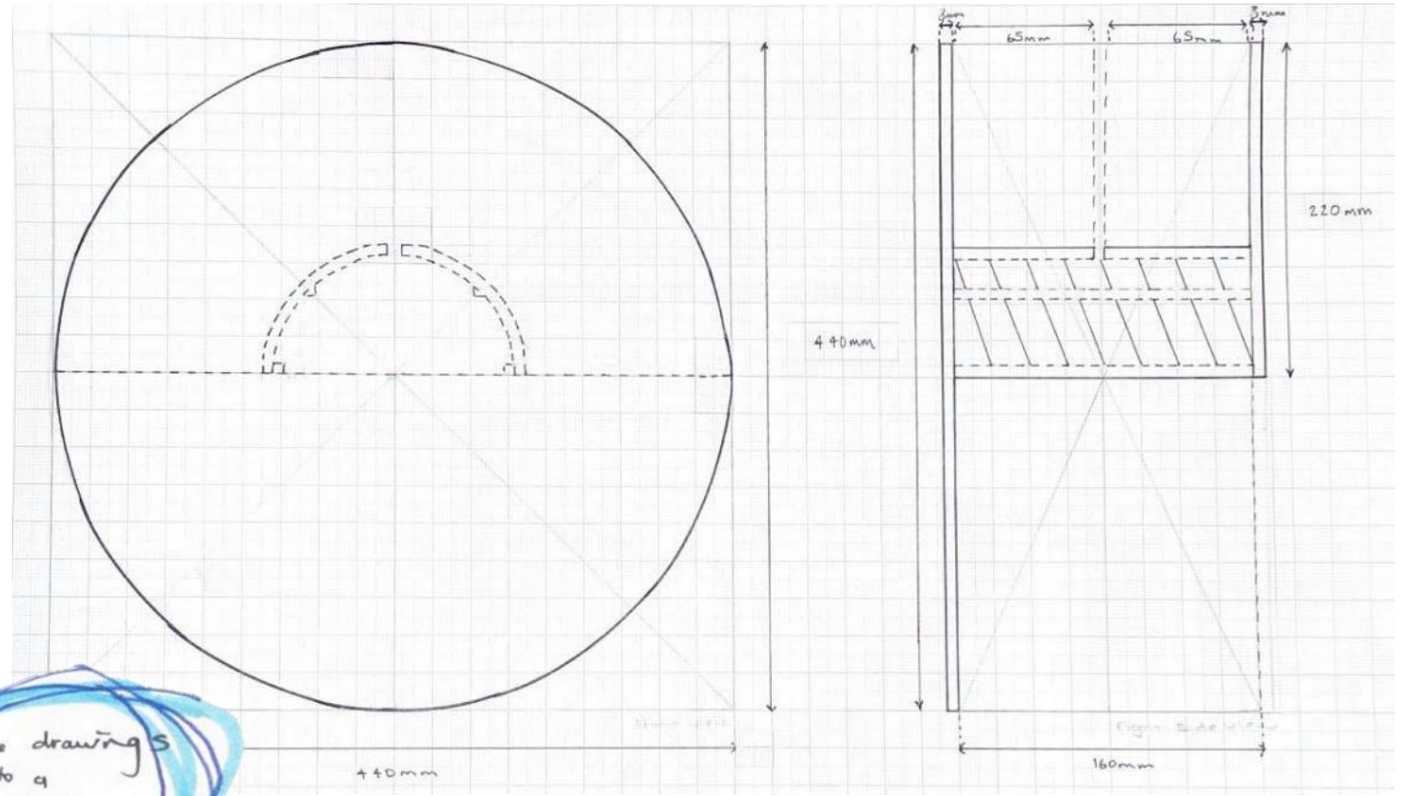




Body

Final design 2 – technical specification





These drawings are to a 1cm : 1" ratio.

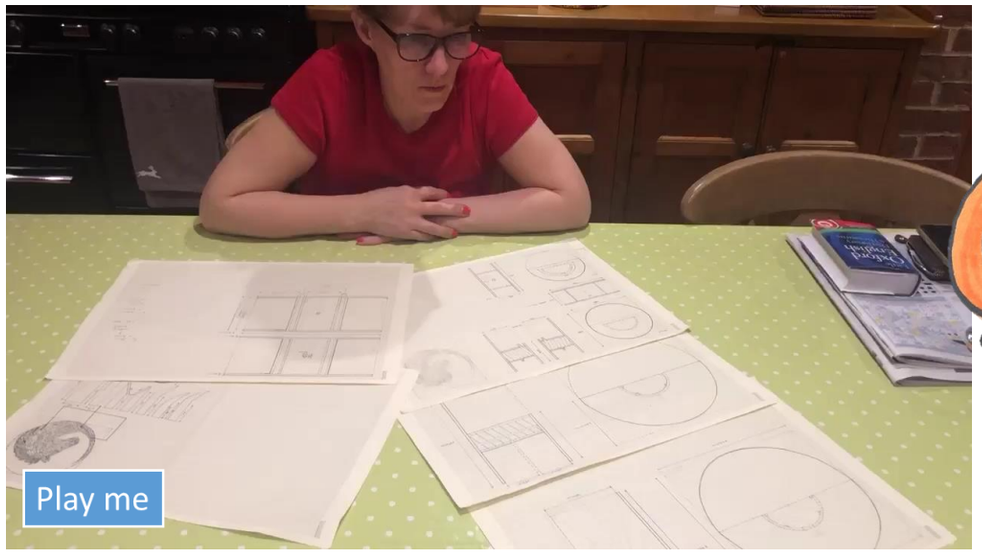
Here is a to scale model I made of what I my client is expecting the final pieces to be as well as what I want. This design has been run through everyone that has had a input into my project

After visiting the blacksmith and talking about any improvements she feels I need to make to perfect my design, I have redesigned my final design and have create a too scale model which I wish to take to my client, Amanda, and get her opinion on.

I have been arranging an opitunity to use the plasma cutter at a partner ~~ess~~ school, to cut out the main parts of the body, then I will use Julie to help create the bends and textured material elements.

Moving forward...
I need to contact the Morchin tullavs school about cutting out the pieces to create my product as well as to do some shopping!

Client feedback before starting making



Areas Amanda was unsure about:

- holes through the curve for the hose to go through
- whether the horse body/head was made of one piece of metal then textured or whether it was tiny pieces added together.
- how the pieces will be attached to the wall.

Did the model answer any of her doubts?

- The head will be made of lots of different pieces appose to 1 singular piece.
- The hose no longer has a bottom piece where the hose is pased through.

Any areas still to consider...

- is the hose, hole a useful idea / practical?
- will many pieces used for the head decoration be too much, add too much weight, cause issues?
- how to attach to the wall?

When with Mandy, we also discussed what material I will be making the product out of - we have already discussed is to use a form of metal. My latest meet with the blacksmith Ian helped me chose mild steal, along with the help of my teachers option - mild steal, cheap, flexible + long lasting.

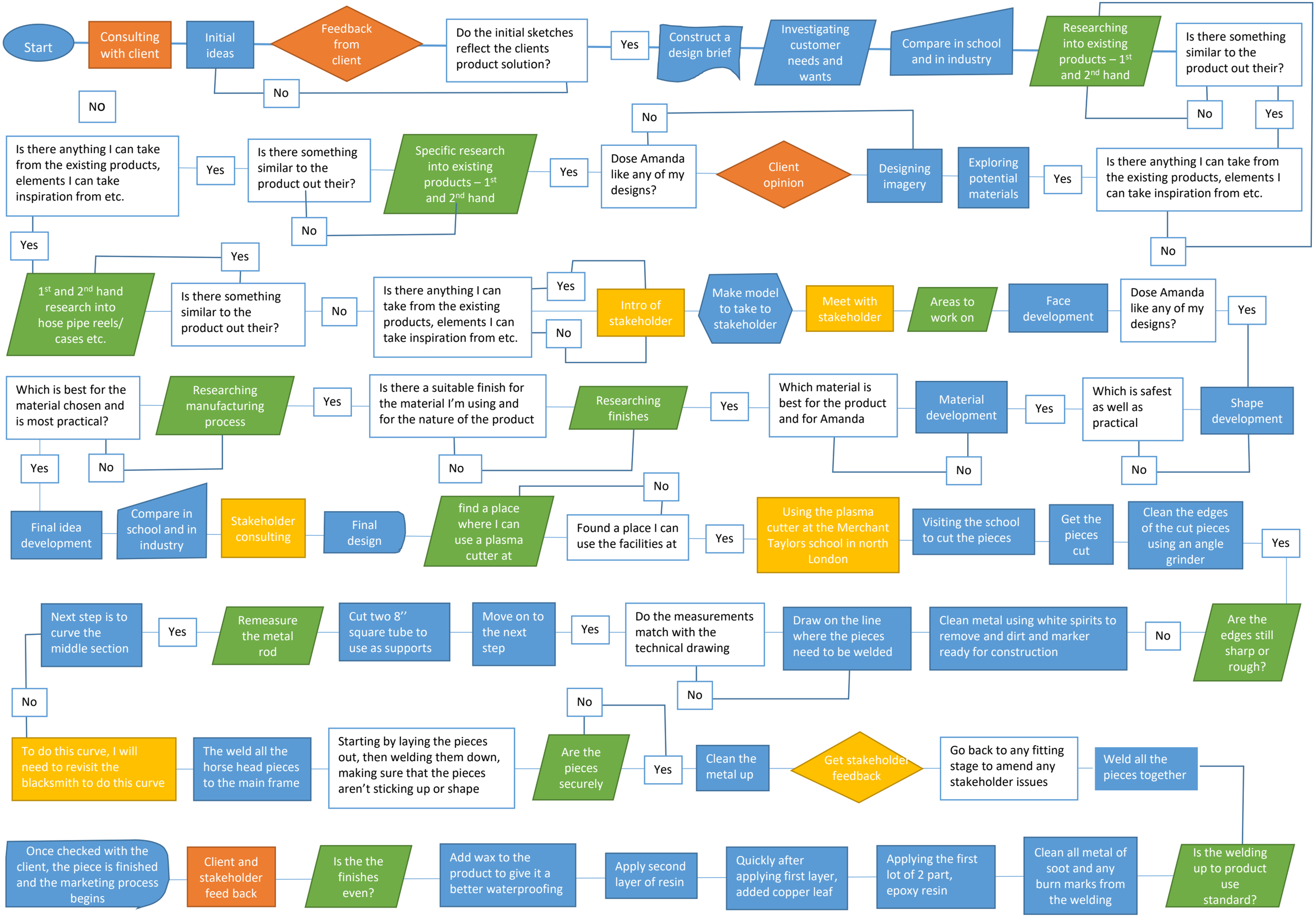
finishes

- Amanda likes the idea of having a natural looking finish and is keen to agree with dulies opinions and use resin as well as using copper leaf to add details.

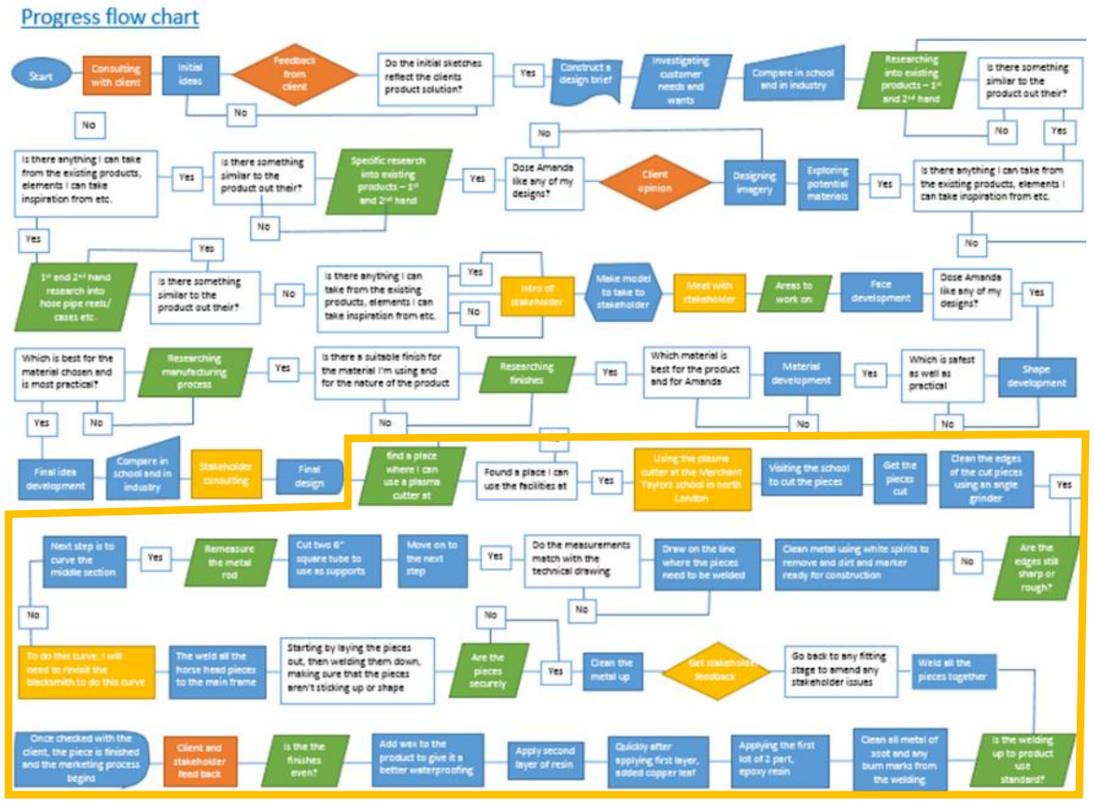
AREAS TO WORK ON -

- How to attach the hose to the wall -
  - ask blacksmith + dad (builder)
- Hole in the curve -
  - test to see whether its practical
- increase the size of the horse head elements to help reduce weight
  - edit drawings

Progress flow chart



Predicted making process plan for final prototype.



Here is my prediction of the making process.

each of these steps can be divided into sections; design, research, making. There is also a evaluation section, but this flow chart has not got this included. There are also many other areas that take time but can be subcatorgirised under one of the other titels. for example, Risk assements/health and safety.

Refering to the flow chart I analised how long each section should take to help with the idea of time to take one product.

In School vs. Industry →

→ As this is a prototype – a one off production method the time taken to construct the product is much higher than if in industry, as I wouldn't need to consider doing individual component making – Mass production would occur.

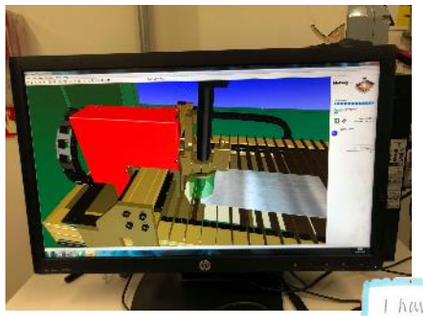
Step	Equipment	Health and safety	Time taken
Creating a 2D net for the product pieces	Computer with 2D Design on	-	1
Cut the pieces out	Plasma cutter	Tinted eyewear	1.30
Cut the pieces for the main and body	Snippers Jump cut	-	0.45
Mark out 8'' on metal tubing	Whiteboard pen ruler	-	0.02
Cut the 8'' tubes	Chop saw Metal tubing	Goggles Apron	0.05
Clean the edges of the cut metal	Grinder	Googles	0.20
File the hose in the curve pieces	File Clamp	-	0.20
Mark out where pieces will be welded, on the metal	Whiteboard pen Ruler Flex ruler	-	0.05
Curve the mid section pieces	Rollers Fly press	-	0.45
Flatten 1cm each end of the curve	Anvil Hammer	Leather gloves	0.10
Weld the tubes to the curve	Welder	Leather apron, gloves and coat Welding mask	0.35
Measure to see if the weld is straight	Set square	-	0.05
Weld the curve to the main face	welder	Leather apron, gloves and coat Welding mask	0.40
Measure to see if the weld is straight	Set square	-	0.05
Weld the back on to the model	welder	Leather apron, gloves and coat Welding mask	0.35
Measure to see if the weld is straight	Set square	-	0.05
Grind down the welds to make smooth	Grinder	googles	0.30
Drill holes in back panel	Hand drill with a metal pieces	-	0.15
Curl the main pieces	Clamp plyers	-	0.15
Draw on the horses head outline	chalk	-	0.05
Weld the horses main on	welder	Leather apron, gloves and coat Welding mask	1
Use a wire brush to clean and check welds	Wire brush	-	0.10
Reweld any fallen main pieces	welder	Leather apron, gloves and coat Welding mask	0.5 ~
Weld on the horses head	welder	Leather apron, gloves and coat Welding mask	3
Wire brush to check durability and to clean the welds	Wire brush	-	0.15
Reweld any fallen body pieces	welder	Leather apron, gloves and coat Welding mask	0.05~
Clean with alcohol solution	Cotton buds White spirts	Plastic gloves	0.20
			8.55~

Making the final pieces

Before sending my metal to be cut in the plasma cutter, I was required to cut the metal to 600mm to 600mm to make sure it fit. Initial the process took us to use a jigsaw, the jigsaw wasn't effective as the pieces kept getting too hot and snapping following a few attempts to amend this; pouring water while cutting, changing bits, I endded up calling my dad and asking his advice, which lead he to admit his help. He used a angle grinder with a thin router on to cut through the metal.

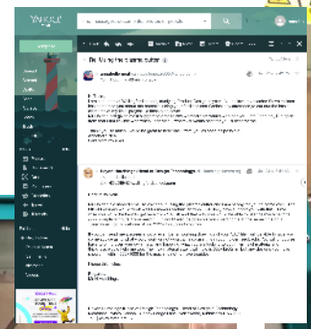
Here my dad didn't take any health + safety procedures, he could had protective eye wear or even gloves - but as a experienced builder he choose not to use either.

* The plasma cutter is robotic and is restricted with a plastic sheet. The only health + safety protocol is to wear leather, heat proof gloves when picking the metal up after is been glue, then to submerge in cold water.

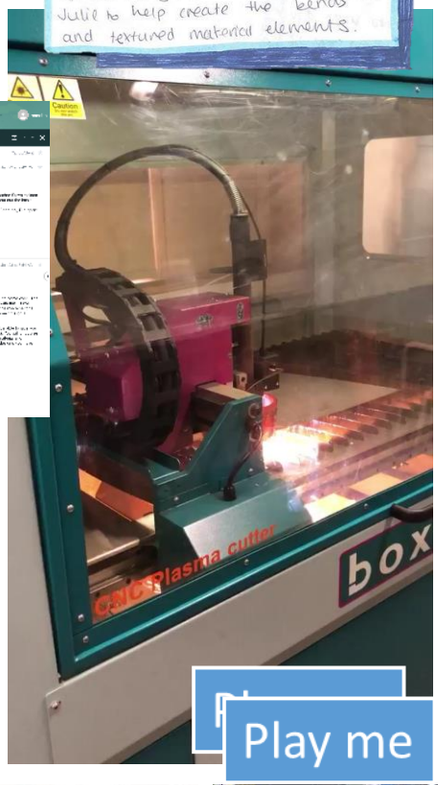


Once the metal was cut to the size of the plasma cutter. The next step is to travel to the school to use the machine. To do this I will be taking a day out of school to travel to London and use the machines / facilities.

Email convertation with the head of DT at Merchant Taylors



I have been arranging an opitunity to use the plasma cutter at a partner school, to cut out the main parts of the body, then I will use Julie to help create the bends and textured material elements.



Play me

Starting with a 2D design of the product I'd like to cut out on the laser cutter, I created it on a design software called coral this then gets transfered into the plasma cutter software which then... creats a 3D didital image of what you want to create. once completed you are required to adjust the settings to fit the diameter and thickness of the material before cutting it out.

Clean up

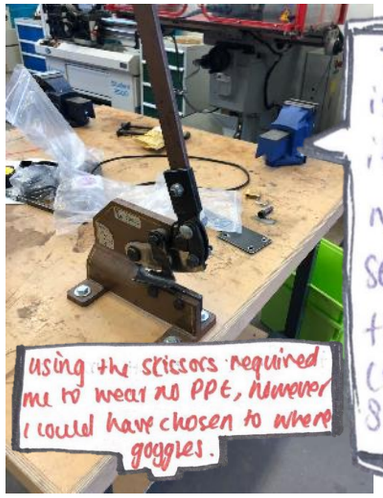
Play me

I didn't wear any type of PPE when grinding the edges apart from goggles as the protocol for a angle grinder are very relaxed - ideal I could have worn something over my arms.

Here I'm using the angle grinder to smooth round the edges after getting the metal plasma cutter. This is being done for health and safety reasons as well as for appearances reasons.

Health and Safety: the edges could easily cut or scrape someone if you came into contact with it, rubbing off the sharpe edges reduces that risk

Aesthetic appeal applies to the burnt metal / melted metal around the cut lines which meant the metal had a brown tinge to it, which was grounded by grinding the edge



This machine is called 'chippa' it cuts through metal like scissors - I used this when cutting the smallest main parts

using the scissors required me to wear no PPE, however I could have chosen to where goggles.

Here I'm using nail varnish to remove any dirt and sharpy on the thin pieces of metal that will make up the main

using the stamp required no PPE, but a warning was given due to the manual power required.

I used this machine when cutting thinner longer bits for the main.

Now that the main body is done, I need to move on ~~this~~ to the face of the hose container. Starting with the curving of the main, metal stripes. I did this by clamping the stripes down and using metal pillers to curve the metal - adding a twist.

Making the final pieces

When chopping the metal tubes I used plastic goggles to protect my eyes and ear defenders as the noise is really loud.

NEXT→
I needed to cut the metal rod to 8" long pieces - I did this by using the mitersaw/ Chopsaw with a metal blade in it.

Here I'm using a chop saw to cut straight cuts through my metal rods. During this, I wore PPE - personal protective equitment, including ear defenders and plastic ege wear.

Here I am marking up all the angle measurments to help me when it comes to making and welding on the curved componets. As well as marking up the areas where the metal tubing will go, which will be my support and welding base.

The next step is to drill a pilot hole in the mid of the rectangle, joining arc.

Play me

Here I tyed my hair back and put on goggles to protect my eyes from any flying metal pieces.

using the piloct hole as a starter, I moved to using a piller drill to make a bigger, more accurate hole for a hose pipe to go through

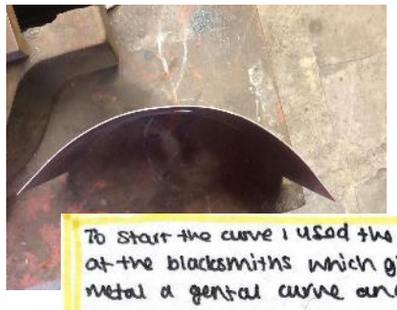
... once drilled, I filed the hole to get rids of any splinted metal and to adjust the size of the hole.

Here is my test just to see whether the hose would fit through the hole to place the hose
↳ while the hose seems big, too small for the hole but the hose my client has is a smaller hose diameter.

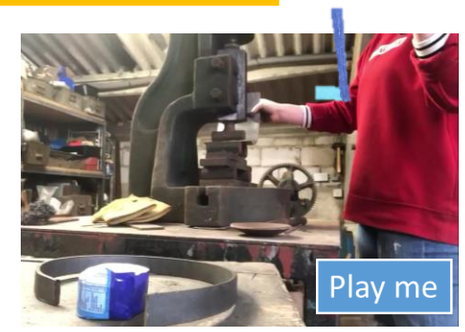
Visiting the blacksmith

Here's what I used - It's called the fly press.

This is the first pictial type of the curve with all the elements together to measure the curve size.



To start the curve I used the rollers at the blacksmiths which gives the metal a gental curve and initiates the metal curve process.



Play me

From using the rollers to start the curve, to make the curve more formed. To do this you use the entier power to push down and bend the metal. This process allows me to be more accurate with my forming, however it is much more time consuming

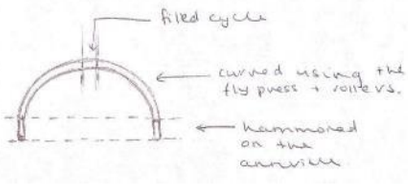
To measure the curve I wrapped around a 20cm tube jig which I could use to curve the metal around. - This showed me that I needed to finish off the corners. To do this I should hammer the edge as im also neededing to add support bars.

Making the final pieces

Moving forward, to make the curve fit around the square tubes (support poles) I used the annville and a hammer to give each side a flat straight edge.

Here I tyed my hair back and put on goggles to protect my eyes from any flying metal pieces.

the metal tubes ... ear defenders as it's ... really loud.



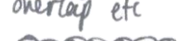
around the square tubes (support poles) I used the annville and a hammer to give each side a flat straight

Starting off I needed to make sure all the metal elements are measured out so they sit nicely when im welding - no causing any gaps or unbalancement when constructed. Once measured, start tacking with spot welding the support poles then, line welding them down, then spot welding the curve to the poles as a base to work from to then line weld the main shield element on.

Here are the some images of my welding on the complete main body of the hose component.

Now that the main body is done, I need to move on ~~the~~ to the face of the hose container. Starting with the curling of the main, metal stripes. I did this by clamping the stripes down and using metal pillers to curve the metal - adding a twist.

Spot welding requires the welds to be about 1sec long and to overlap etc

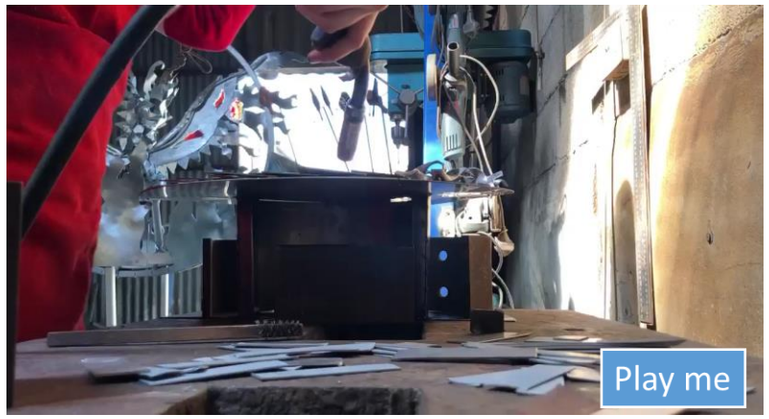


1weld

Before I started welding on my 'stock' Julie suggest I practised on a equal thickness material at a 45° angle. As the metal requires a different welding technique as the temp of the welding gun, is strong enough to burn through the metal.

The burn marks on the metal (the black soot) can be simply scrubbed off with a wire brush!

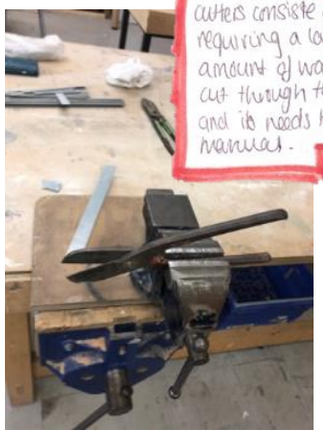
Making the final pieces

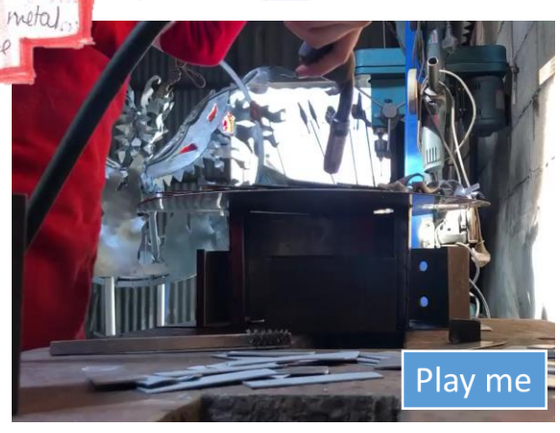


My next step was to lay out my main pieces and to then weld each pieces down - during this stage i did found i needed to go back to the annville and re-shape the curves to match the pattern of the main as i weld.

Next I placed and welded on the mouth horse element. I had an issue with is due to the over-lapping element. so I ended up resorting to randomly placing pieces.

Health and safety issues while using the cutters consiste of requiring a large amount of wait to cut through the metal, and it needs take manual.





Due to the thinness of the material, the weld marks produced more saite and was more elagable to create mess - the metal, melted and poped causing small weld blobbes. to solve this, I used a wire brush remove the dirt.

Here is a close up of a common issue I found when welding; due to how thin the metal is, the metal was prone to burning → easily areas removed with metal wool.

Due to the fact I will be welding on my product, I wanted to practice first as its been a week since my last time since I welded.

using the metal wire brush removed most of the dirt and even some of the glaze on the metal/head parts. However for further tiding, I will have to use a smaller, more delicate method to get into ~~and~~ any gaps

Here is a video of me welding the main head piece on! → I had to add weights to the metal case as I found the metal kept moving. I also did this to the piece I was welding on.

Cutting the pieces out lead me away from the forge and back to school. However as my project was not done I needed to get back in contact with Julie to finish the nose head.

Re:

annabelle neal <annabelleneal2000@yahoo.com>
To: Julie Gross

Hi Julie,

Hope you're well and all your projects are going well!

I was wondering if it would be possible to visit over the next 2 weeks while I'm on my easter break to finish off my project?
I'm couired to finish my project over Easter so I can get it done and out of the way before my exams start.

I look forward to hearing from you.

Annabelle

julie gross <julie@xtra.co.nz>
To: annabelle neal

Apr 7 at 8:29 AM

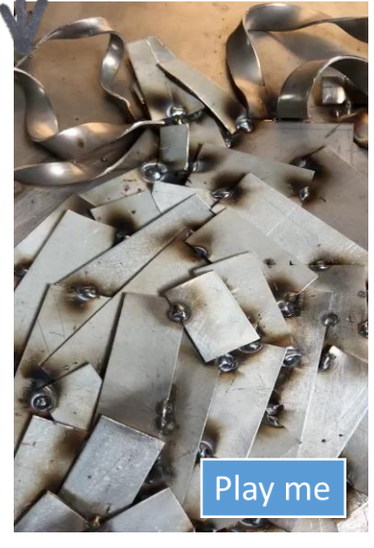
Hi Annabelle,

Yes, next Friday is clear as is the week. The following week is also, bar weds 17th.
Let me know what suits (sooner rather than later) so I can booked you in.
Don't forget the cookies 😊

Julie

Get Outlook for Android

As I ran out of metal from my trip to The Merchant, taylors School, I resorted to using a metal accuired from school, however this metal, while still mild steel, the metal is thinner and is covered with a glazing which gives it a discolouration. This is why the head looks a different colour to the body.



Moving forward

once the product is fully cleaned, I will need to finish the product off. then I will need to think of school + industry developments and client and stakeholder feedback.

Final product

Evaluation - Final piece feedback from the client

In this video I got my client, Amanda to give me her thoughts and opinions of my final product, things she liked and didn't like so I could consider that for next time. I ended the video buy asking whether it is what she imagined would be the final outcome and whether she would consider purchasing in in real life.

Eventhough my products construction is complete, I never managed to apply a finishes - my initial plan was to use a 2 part resin to encase my product then to add copper leaf for colour

However, I believe my product is still a passable edited and could be considered finished as metal can be left to rust outside, to give it a natural look.

Likes	Dislikes
- The pips from the welding – found it gave it a fun texture - The overall look of the hoses head and body – was pleased with the layering effect given, and liked the main. - Likes the shape and overall size of the product	- Found that some of the more important bigger welds were quite messy, although believes that it was still a good attempt - Found the whole weight of the product a lot, although realises that wont be an issue once mounted on the wall.

The hole on the curve is a good idea but isn't practical, if the hose is below the cover as it cuts off water

Here is an image of my product on the wall of my clients house

I've placed it above the hose tap to make it convenent to hang the hose around when not using →

I believe I also got the balance correct as the front section isn't bowing off the wall

The screw holes fit the screws I was recommend to use, however, I was told to added another hole so the screw could slot in

I believe the final product turn out a right size but was very heavy.

How can I improve?

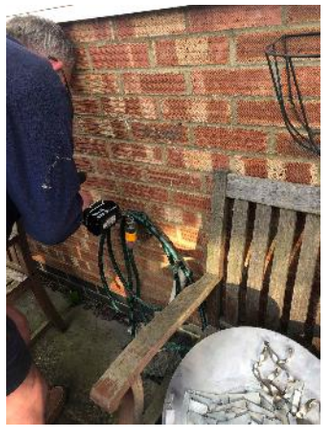
- In school I had a Tight Knit Scale, if I was to make my product again I would make sure I had longer learning how the weld in order to produce a overall clean finished product.
- The weight of the material can not be helped, in future I would consider different materials of edding the imagery and could also use a thinner metal.

Feasibility of the final product table

Before construction of my final product, along with a prediction of what my making process might be + risk assessment I have also listed some of the methods I will undertake, to show that my product is feasible.

What?	Who?	Where?	Why?	How?
Interview Client to see whether the final model is what they imagined	Amanda Grant	Organise a meeting at Amanda's House	To see whether Amanda's needs and wants have been met, to see whether what I have created is suitable for the uses she has for the product as well as suits her environment	-
Interview prime stakeholder (Blacksmith) to see whether the final prototypes product has been successful	Julie Grose metal design	Julies workshop in Nuffield	Structurally, the product needs to be safe and securely, referring back to Julie and asking her, her opinion on the final outcome, will help me know what structurally I have to reconsider when redesigning in the future.	-
Interview potential retailor to ask there professional opinion as sellers and buyers of similar products	Keri Harvey – owner of Keri's florist	Keri's shop	Knowing whether the product is actual sellable makes a huge impact, if no one buys the product, it means it has not been a suitable design solution to a common issue/ gap in the market. Referring to Keri, will also help me have an understanding of pricing for my product, and how I should go about selling the product	-
Interview a range of potential customers, to see whether my product is potential suitable for a multitude of people	Including: Pat And Bill . G Laura Lee And Finlay Plumb	Set locations including my house, school and peers homes	Seeing the opinions of a range of people helps narrow down what the market expect and require from such a product. Not listening could lead to products being created that have a no purpose or use. Hindering the manufacture more then helping.	Ask a range of questions, all the questions should be the same so I reserve normative date that I can then use when redesigning my product
Functionality tests to measure basic operating skills of the product – to test if there are any major functions wrong with the product		Outside, in school and at Julie's workshop	Testing a product is done for safety reason and for design reasons, knowing what works and what doesn't as well as what can cause issues and potentially creating solutions helps massively when redesigning an altering a product.	Using weights, tape measures and natural weather to test similar elements that need to be up to a certain standard to do well
Pictures of prototype in use	Client and peers	Clients home and at school	Seeing it in use and reserving visual feedback is beneficial for the aesthetic part of the designing, as well as it being useful when marketing the product, in magazines or websites.	Using a camera
Check to see if a painten of a existing product exists.		Online	Knowing whether a product is already existing when trying to find creative solutions to a response to the gap in the market, it is also a easy way to see what ideas have been successful and what ones have no by how well know any similar products brands.	Visiting the online website and searching for similar products

Feasibility of final prototype – Evaluation of product with potential stakeholders



Paul helped me contect the hose pipe cover to the wall, mounting and fixing. During this process, I was required to make the screw holes bigger in the back of the metal panner. Then I was required to ask pauls help to drill holes into the wall, add wall plugs then drill the screws in.

Due to Pauls frequent help he has given me during the construction of my project, this makes him a stakeholder. Because of this I asked him to give me feedback about my final prototype . Overall he gave positive feedback about the structural and fitting process of the the hose cover/ storage solution. From what he has said, I've taken that I need to redesign a more suitable and extensible method for people who haven't got access to a drill or some method of fitting the hose pipe onto the wall. As it took me and Paul, marking the hose hose for the drill out, then for me to hold it while he drilled. He also suggested that the edges o some of the metal pieces were still a bit rough and sharp, and could cause issues if younger children were running around near the hose etc. Even though he pointed out some of the faults of my project, he also complimented it highly, Saying he felt the imagery was effective, and that I could easily allow clients in industry to pick the animal on the front. He also said he would purchase one for himself in the future.

Here are a range of potential clients, I have selected a variety of people of different ages and interests to gather a collective selection of pros and cons of my product to help me develop it in future.

I wanted to reserve some real life stakeholder feedback, so chose to visits a local florist who also sells such products like the one I have designed. I asked Keri to tell me what she liked about my product and what she though I should work on. She answered by saying;

' I love this product! Its something I would totally sell in my store, and I know that I have clients who would want to snatch this up straight away! I like the use of little pieces of metal to make up the beautiful horse head shape on the front of the cover, I love how you've incorporated the little welds into the design, I do feel that it my be a little bit heavy, consider the types of people who tend to spend lots of time in their gardens are of the older generations, but once its up on the wall, the product wouldn't be cause an issue through that element! For clients with younger family's, I would be worried that the edges on the metal might still be a tad too sharp! But if you were to add some form of glaze on [I mentioned that I could be applying a finishes in the future] it should help even though metal a bit more and reduce the sharpness of the edges!'

I asked Keri, how much she thought I could sell in for in industry, she responded by saying; ' I could easily sell this for £200+!'

I was blown away by this amount, conspiring I spent no money on materials or the construction process.

Overall, from my trip to visit a local potential stakeholder, I gain some interest feedback, that I can defiantly use if I was to redevelop my product again in the future, or take in into industry.

[Keri asked if she could not be filmed during the feedback process]

To make sure I covered a range of potential clients I enlisted the help of a friend, Finlay is 18, he has little interest in horses but enjoys helping in the garden. Overall Finlay liked my product, when I explained the product to him he initial showed little interest, upon seeing the product he changed his mind, he felt the design was practical and could see it making a differences in the garden, bringing character as well as a function, He didn't however, find the design be aesthetical appealing due to his lack of interest in horse and the lack of colour. He suggested adding paint or processing with the copper leaf idea would easily brighten it up, and would become far more eye catching to a customers eye, even if they were no a huge fan of the horse design I have created on my prototype.

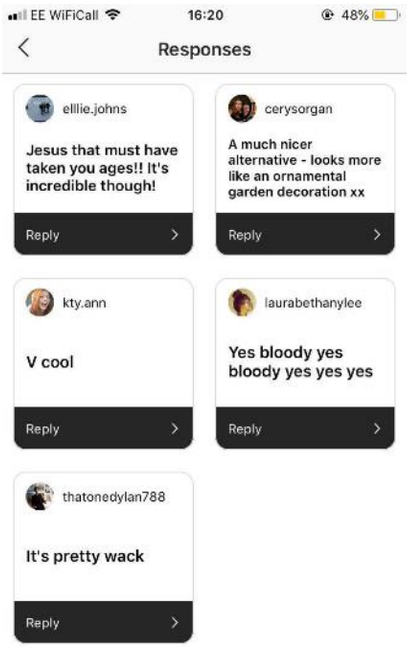
My next potential customer is Laura Lee a 29 year old singing teacher, who is currently looking to purchase her first house, She is a fan of gardening and wishes to make practical purchase that means she can have an aesthetically pleasing garden that is also functional. I though Laura would be a perfect customer apart from the fact she is a post graduate student and is not in a position to purchase and use a product like this. Along, she still gave me some insightful feedback, stating that she would potential buy this product once she has a house or even for a present for her peers. She suggested that the product could be a tad heavy and that some edges are still rather sharp. Apart from those factors she praised my prototype for being unique and sophisticated, fun but still practical.

Pat and Bill are a elderly, retired couple who enjoy nothing more then spending the day in their garden. I asked them both to share their thoughts and opinions on my product. Between them them pointed out the convinces for the product being put on the wall, as it means they don't have to bend down or get on their hands and knees to access their hose, the also mentioned that they liked the overall look and design of the product, and loved the relief of the metal decoration. Pat said that the product is rather heavy and feels she would require someone to mount the product for her, especially is Bill was not there to help. Bill expressed no negatives to the product and said he would happily purchase this product in the future.

Feasibility of final prototype – Evaluation of product with potential stakeholders

Below is an email RE my product, from Julie, where she has stated the process I did to make the product, as well what she likes about the product and areas I need to develop. As well as how she feels it would do in industry. From this I can use this to help develop my product in a more professional matter.

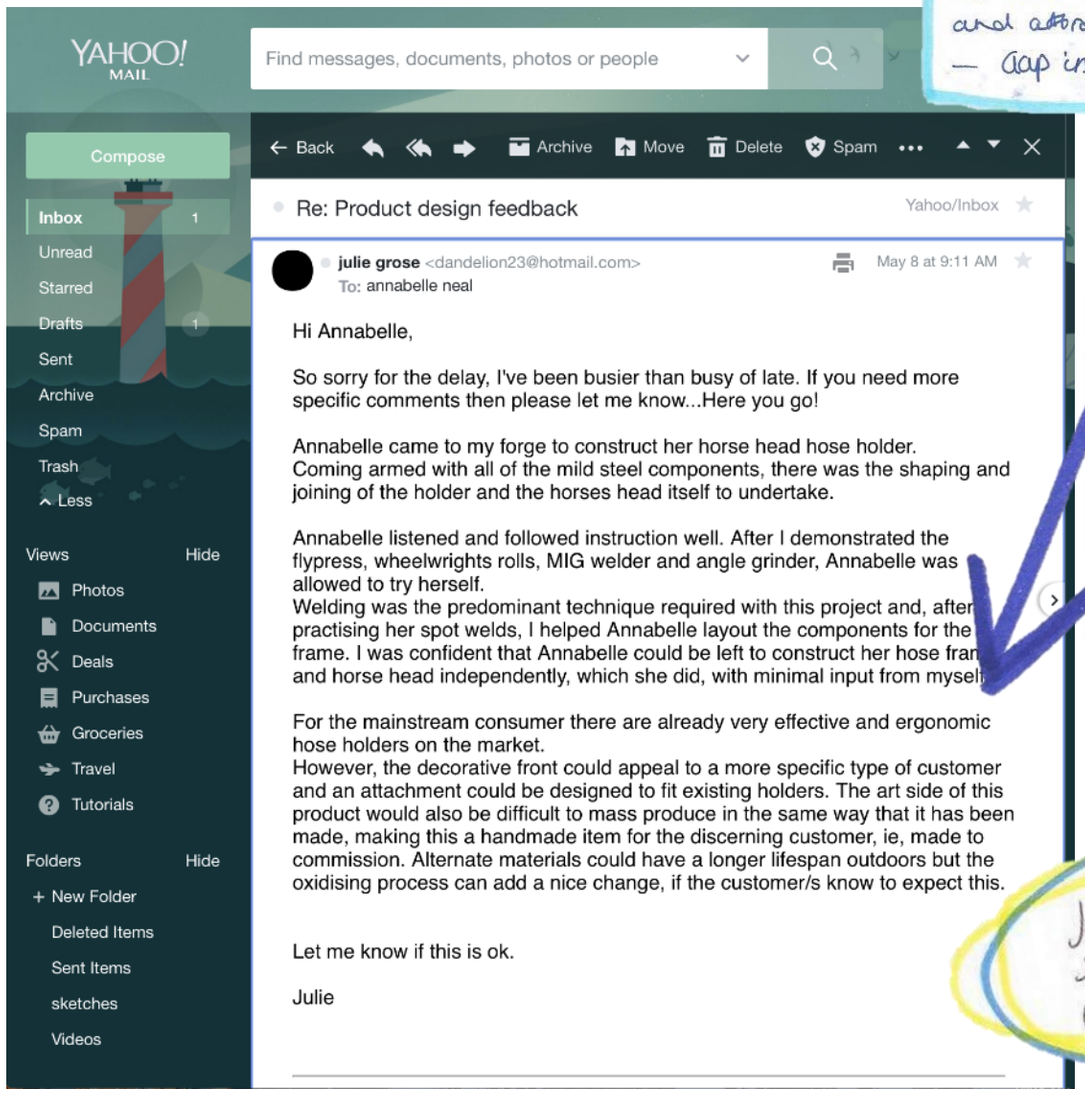
While using a platform like Instagram to get a large amount of responses, they are all around the same age group of 17-18. This is not my target market however, feedback can still be useful from these people.



Here Julie states that there is already very practical, and more efficient than my product, hose reels available on the market. However mine is still good and attracts a new range of customers. — Gap in the market filled?

Once I completed my product, I advertised it on a public Instagram post to receive feedback on my product, here is a few of the responses.

Overall the feedback I am receiving for the product is mainly positive.



Analysis + evaluation of primary and/or secondary sources.

During the designing of my product I consulted many people with ~~extra~~ professional expertese they could use to advise me, I also spoke to potencially customers, as well as my client. I also used the internet to research into existing products.

While using the internet isn't always a justifiably way to share product design off of, I also went into many shops and visited many art exhibitions to find out about existing similar products whether that was hose pipe reels or sculptures.

Julie was the most reliable and suited stakeholder I resorted to when I needed information on construction.

NEXT > Moving forward, I need to write a critical analysis of my product.

Critical Analysis – AACCCESS FM

NEXT STEP →
Once ive completed a critical analysis, I should consider whether I've managed to meet Requirments set by client.

Here i've used a analysing method called 'AACCCESS FM' which covers many ground as a design that should be considered. Here I can see what I need to work on and what I've completed to a high level.

What?	Aim – referring to first in school vs. Industry	Why?	Achieved?
Anthropometrics	To measure an refer to the perfect measurements for my client/ target market.	Considering proportions when designing , allows the designer to guarantee that it can be used comfortably by a rang of people/ The target market for a product. Foe my product, there are few areas where human measurements can be used to influence the overall design. The main frame can be designed referring to said measurements, however, due to the non-specific natural of the product – gender, age, etc-, and its singular practically use, I do not have to consider much more	With my consent assembly with stakeholders, and my creation of multiple to scale models, helped me find the most suitable size, depth and shape for my final prototype, model. However no where along the designing process did I take real measurements or refer to second hand data for the correct deigning size for my product. This would be done properly in industry, but from my inform way of feedback on size, depth etc. I did conclude my project to a suitable and practical size for my client.
Aesthetics	My client wanted a product that was suitable for outside use, and gave off a sophisticated yet quirky character. The look of the design was important to Amanda, however the only truly demand she had was to make my product include/ resemble horse(s)	The Look of the product is one of the most important selling point for a product. If potential customers like the images attracted to the product they are likely to purchased it. For Amana, her brief was to create a practical, aesthetically pleasing product for the garden, which had a function and wasn't just sculptural.	I believe I have done well in creating a product with such a high aesthetic level to it. The image used n the front fitted Amanda's brief perfectly, while allowing me to experiment using a multitude of different specialist techniques and materials. The overall look includes relives and plays with dimension, while being very simplistic. I would say a down fall of my product is that it lacks colour in the current stage, however I know that in the future and in industry I will be applying some form of finish that includes some colour.
Cost	To keep the product costing down, considering the most sustainable methods of product, considering product demand in industry as well as environment.	Creating any product, which will be handmade in industry means there is likely to be a higher cost due to the reduced amount of materials being bought at once an the labour costs for one person to create one product. Overall it took myself 1 day to create my final prototype, not including travel time and time spent in-between redesigning, communicating with stakeholders and time inactive o this project. A days work would be equivalent to around £10 per hour (for a student crafts woman) meaning for a days work the total cost would be £100. From that metal cost would be around £25 per product pre cut out - outsourced in a batch fashion. The total estimated	When making my final pieces, I paid nothing towards the construction or materials. I was provide by everything I used by school. In industry, this would not be the case, I would have to cover the costs of materials and labour – etc, for myself, in order to create my products and to make a profit. When making models I also tried avoiding purchasing new material, I wanted to make the out of recycled or upcycled materials and products, experimenting with my idea of creating a suitable product.
Client	To for-fill my client, Amanda personal brief to me, to create a garden, tool with a high practicality behind it as well as a high aesthetic appeal aspect.	Consulting a client while designing makes its easier for the design o come up with the 'perfect' design for the gap I n the market, while his means that I only meet the requirements and needs of one person directly, these needs are coming from a unhappy customers who are looking for something to fill there needs. This means that many of the requirement and needs Mandy had are likely to be experienced by others to.	Overall I managed to find time regularly to consult back with my client to make sure the direction I am taking my design was working well for her, and was meeting her expectations. However, I didn't always just relay on the feedback given from my client, I also consulted many individuals who had a more professional insight of my product. Overall I achieved my target of conferring with my client, and managed to also use the experience of others to advice my client and change my design to make it more practical.
Culture	When designing and manufacturing any product, the aim of it should be to me morally, ethically and environmentally right. This was also an aim I had when designing my product	I have already explained about the research I did in to environmental factors to do with my product – I also took time into researching into the symbolic resemblance of a horse. I initial came up with a multitude of designs including different animals to broaden the choice with my client and to make sure I had an appropriate animal. In industry oi would also have to consider where I was sourcing the materials needed from and whether the people making and suppling the materials was a ethically fair company.	During my design process I did research into the imagery I wished to turn into a sculpture to make sire the animals I wanted to use and may use in industry, were seen as culturally appropriate. I didn't however do research into where I was getting the material used from and the ethically connection it had.
Environment	In my 'in school' project, I will try and consider the environment as much as possible, in terms of, materials, manufacturing process, finishing methods and comparing the 'in school' product process to the 'in industry' process.	When producing a product, much time and care should go into making it in a sustainable and environmentally friendly method to make sure that the product of 'your product' isn't coursing environmental issues. If company's in industry was more considerate of the environment, less damage would be coursed and products would become more niche. In school I am only making 1 prototype but if I was to make this in industry I would chose to make it using 'one-off' production and order materials when I need it appose to mass purchasing casing lots of waste.	I did lots of investigations into the use of alternative metal materials, experimenting with recycled bottle caps and metal cans, theses were done to see whether I could product something from 'rubbish' making it a zero waste efficient product. I resorted to using old scrape materials, which while I haven't used directly waste materials, I am upcycling and reusing material that ha no other purpose, In industry I would have a bigger drive on making the whole product from recycled materials appose to just the decoration.
Safety	During the construction of this product, I was using a range of machinery and techniques that have many risks associated with them as well as the product itself having many potential downfalls in safety. My aim was to reduce these risks where possible and to find safe solutions to areas that required me to use a heath and safety risk element.	The safety of the manufacturing and the client is very important, in school and in industry. Know one should b hurt as a result of a manufacturing procedure nor should they be hurt from a end product, especially when there are ways around obstructing any pain. In industry a customer could sue the company if the product isn't suitable for human use and so could staff if they are injured operating a machine with no safety training or PPE	I spent a lot of time during my making process constructing risk assessments finding and educating myself on how to use the equipment or participate in a proceed safety. I would say I achieved my aim and would, in industry, use the same level of care to make sure myself and other are educated in heath and safety and proper use of machine so customers wouldn't get hurt or injured.
Size	To make it to the size of an existing hose pipe reel.	The measurements of this similar existing product has been approved by designs meaning that is likely to be ergonomic and a suitable fit to the average customers body shape. Changing the size would require me to justify a change in dimensions and would lead me to have to gather more research into ergonomics.	I did manage to use the basic sizes from the existing hose pipe when designing and making my final product.
Function	Its function, taken from my clients brief – 'to store and hid/ descries a hose pipe. Being atheistically appealing as ell as being practically'	The aim was to develop a existing product – the hose reel – and to make it more aesthetically appealing well being more convent as am easy storage solution	I feel I executed the 'aesthetically appealing element very well, with my horse head design on the main body of y product, however I feel that there is still elements of my product that could be redesigned to improve the practicality of the product.
Materials	With my work environment I am not exposed to a large variety of materials due to cost and not having the right equipment to process it - jet cutters or plasma cutter. As I am only making a proto type, I have been able to get my hands on some samples of different materials – metals, to experiment with but not enough to make model out of to test	Using a environmental considerate material means that the product will have zero impact on the environment, I've had o limit the materials I could use down to metal as it is the most appropriate for use in the garden, for long time exposure to weather, including rain and strong wind. Metal can also be coloured and shaped to give off a more artistic feel to the product.	I ended up using mild steel scrapes, which while isn't sustainable or recycled, is making the use of existing waste products and reusing things that might otherwise be thrown away. Overall I feel I did attempt and have practically completed my goal.

Feasibility study – Have the requirements been met?

	What did I need to consider?	How did I make sure it was completed?	Has the requirement been met?
Clients needs and wants, Technical and functional specification	The material needs to be suitable for outside – weather proof	I choose to use metal as, when the right metal is chosen it I long lasting outside facing the elements, it also can be enforced by finishes, including waterproof wax's etc. Metal can also just be left to rust, which does weaken the overtime however it is a nature and environmentally safe option.	✓□
	Aesthetically and functionally practical	I made sure I followed the expectations of my client, taking inspiration from existing products and constantly checking whether the product will be suitable or its purpose – hold the weight of a hose pipe.	✓□
	Considers the environment	I wanted to use recycled materials in my project, however, for my prototype I never used repurposed material, I used off cuts and scraps from cutting out the main body pieces. To create the face for the horse – the pieces for the horses main and body. In industry it would be easier to acquire pieces of repurposed material.	~□
	Light weight and easy to move and mount	My product has turned out rather heavy, and I fear that this would be an issue for older clients. However, when the product is placed on the wall the weight. It is somewhat easy to mount it relies on the customer owning or knowing someone who can drill and mount the product on the wall.	✕
	Suitable for use by all ages	I believe the product is very niche and has not got a purpose for customers under the age of around 20, although they could purchase as a gift for peers – Even though, the product will come into constant with younger customers as many of the customers who would be buying my product are likely to have children or grandchildren, etc. Meaning the edge of the product needs to be smooth and not sharp, I do feel some of my edges are too sharp and could be grinded further.	~□
	Multi functional – has multiple uses or multiple functions	The product that I ant o create, is meant to fill a hole in the market from a aesthetically pleasuring, multi functional garden tool to add character to any ones garden. Even though this was my plan, creating my design lead to be having to abandoned elements when considering time to construct the product, cost and weight overall.	✕
	Product would see for a reasonable amount considering the time taken to make it as well as materials - £150	In school I managed to create my prototype for under £50 as I didn't have to purchase any materials or spend any initial outlay costs on machinery and running of them. I also didn't have to consider costs of labour as I made it myself, only consulting a professional when needed. In industry these costs will have to be considered and as the product is a very detailed and hand constructed, the product will drive costs up. However speaking to a retail consultant, it is clear that I am in a position where I can be charging £150 + for my product.	✓□

In industry, customer, target markets and gaps in the market are referred to and analysise to make sure the product designed and produced is suitable for the audience. Although it is normal that not ever potenical need or want from one of these peers will be met. Deeding which ones to act on and which ones to avoid when designing is difficult, but a proces of trail and error to make sure the final product does meet the areas it's required to can be long and troubling.

Evaluation of final product – SWOT anaylsis

SWOT	Evaluation
Strengths	• Meets the client brief of a creative, aesthetically pleasing hose pipe storage solution • Considers the environment • Low cost to make – excluding designing, research and feedback processes. • Made from a long lasting material that will be suitable outside, isn't to heavy and look sophisticated and fun. • The product has has holes drilled into it, allowing the customer to hand and display the product
Weaknesses	• Not finished meaning that it will rust quickly, causing the structure to weaken and potentially break • Edges are still mildly sharp, even though they have been grinded down, the edges are very thing and could cause scratches and other small flesh injury's. • Turn out heavier then expected, while myself and my cliental no issue with it, an other, less able customer might struggle to move it • Requires the customer to find own solutions for hanging and displaying the product • The product is no longer made from recycled materials
Opportunities	• My product has the potential to be sold for large amounts • In industry the product could be personalised to customers allowing them to pick what size hose would fit as well as choosing the animal on the front panel and even adding colour using paint or leaf. • The product would lead to similar products being made like a soft case – one made from fabric that can be taken off an existing hose reel and could be washed.
Threats	• The product has a very niche audiences meaning there is a chance I wouldn't sell enough to make it worth while constructing. • The design n has room for development, other designers or company's could make there spin of a more effective version of my product, leaving mine out dated. • The product could be industrialised and other company's could turn it into a mass productid product, making it cheaper and opening up the target market.

Here I did an experiment with bottle lids to see how long they would last outside with no coating not on. I did this because I was thinking about using recycled materials and wanted to see if they would work out as well.

I concluded that using small pieces of recycled material would have caused the product to rust at a quick rate, due to the independent pieces rusting quickly and the welds being weak welds.

First – Brand new
Second – 2 weeks
Third – 2 months
Forth – 6 months

After 2 weeks outside, with no finish to protect the metal, my pieces are starting to show signs of rusting - this is showing in areas where I have grinded below the first layer of metal or have welded large amounts.

While this doesn't make the product look bad, it does mean that overtime it will rust, and this will affect the strength of the structure.

The holes to connect the hose reel to the wall will be already drilled, however the customer is required to drill the screws in for themself.

main pieces = 25g × 25 = 625g
lighter mild steel (1.5mm) = 10g × 50 = 500g
heavier mild steel (2mm) = 15g × 75 = 1125g
625 + 500 + 1125 = 2250g

Here I did a estimation of how much all my elements of my project would weigh, just the decoration weighed <2kg, not included the body frame work.

Predicted making process comparison against real making process

Referring back to my making process flow charts, it's clear that everything didn't go exceedingly to plan. For example; the order of construction changed. While the process plan did give a great estimation for the amount of time spent doing each area, it didn't take into consideration any other external/environmental factors that altered the time spent making my final pieces.

Step	Equipment	Health and safety	Time taken
Creating a 2D net for the product pieces	Computer with 2D Design on	-	1
Cut the pieces out	Plasma cutter	Tinted eyewear	1.30
Cut the pieces for the main and body	Snippers Jump cut	-	0.45
Mark out 8'' on metal tubing	Whiteboard pen ruler	-	0.02
Cut the 8'' tubes	Chop saw Metal tubing	Goggles Apron	0.05
Clean the edges of the cut metal	Grinder	Googles	0.20
File the hose in the curve pieces	File Clamp	-	0.20
Mark out where pieces will be welded, on the metal	Whiteboard pen Ruler Flex ruler	-	0.05
Curve the mid section pieces	Rollers Fly press	-	0.45
Flatten 1cm each end of the curve	Anvil Hammer	Leather gloves	0.10
Weld the tubes to the curve	Welder	Leather apron, gloves and coat Welding mask	0.35
Measure to see if the weld is straight	Set square	-	0.05
Weld the curve to the main face	welder	Leather apron, gloves and coat Welding mask	0.40
Measure to see if the weld is straight	Set square	-	0.05
Weld the back on to the model	welder	Leather apron, gloves and coat Welding mask	0.35
Measure to see if the weld is straight	Set square	-	0.05
Grind down the welds to make smooth	Grinder	googles	0.30
Drill holes in back panel	Hand drill with a metal pieces	-	0.15
Curl the main pieces	Clamp plyers	-	0.15
Draw on the horses head outline	chalk	-	0.05
Weld the horses main on	welder	Leather apron, gloves and coat Welding mask	1
Use a wire brush to clean and check welds	Wire brush	-	0.10
Reweld any fallen main pieces	welder	Leather apron, gloves and coat Welding mask	0.5 ~
Weld on the horses head	welder	Leather apron, gloves and coat Welding mask	3
Wire brush to check durability and to clean the welds	Wire brush	-	0.15
Reweld any fallen body pieces	welder	Leather apron, gloves and coat Welding mask	0.05~
Clean with alcohol solution	Cotton buds White spirts	Plastic gloves	0.20
			8.55~

Eventhough I could add more to my project, including finishes, my process were a fully detailed and turned out much longer the my predicted table with welded pepe coming from quality control section and constant travelling to get my project done.

My final model took much longer than I expected, but when working with real life business, I learned to how manage better working around the time gaps between visits.

I also experienced some issues like running out of body metal pieces, this meant finding more metal, cutting it, and then requiring the blacksmith to finish welding the hose cover off.

I did find however, that my time estimations for tasks were some what accurate.
I made sure not to rush tasks as I wanted to create a practical prototype that looks identical to my designs. And meants my clients expectations.

Many of the stages predicted became out of sequence due to the fact I was relying on other people to help with construction. This meant, I or may have done things out of logocical sequence to make sure things got done and I was fulfilling my time nicely.

Because my process plan featured the curve key points of what I actual did, eventhough it wasn't always in the right order.

NEXT STEP

While evaluating the whole process revilled all the areas I need to work on, I didn't think about the risks of doing each task - I should right a risk assessment for each step.

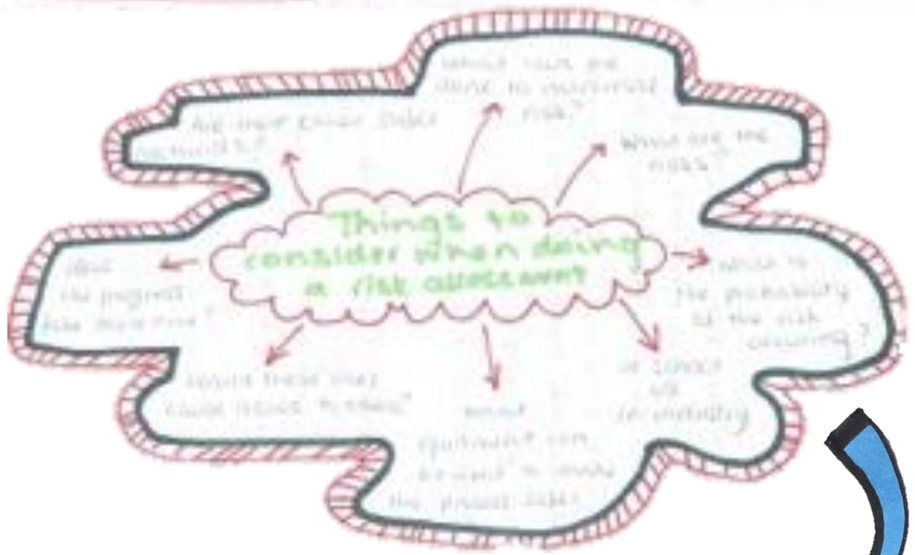
Step	Equipment	Health and safety	Time taken
Consult blacksmith about cutting metal	-	-	2hr
Contact merchant Taylors school to use plasma cutter	-	-	3Days
Cut metal to fit in the plasma cutter	Hand held rotary cutter	Goggle Apron	30mins
Find alternative method to cut metal	Grinder	Goggles	20mins
Travel to Merchant Taylors school	-	-	-
Make 2D design of my net design	Computer with 2D design on	-	30mins
Plasma cut the metal	Plasma cutter	Tinted eyewear	20mins
Cut the main and body pieces	Snippers Stomp cutter	-	45mins
Return to school	-	-	-
Grind the edges of the metal	Grinder	Goggles	30mins
Clean off the dirt	Alcohol solution Scrap material	Plastic gloves	10mins
Draw on the markings for welding	Whiteboard marker	-	5mins
Mark 8" on the metal tubing	Whiteboard marker	-	5mins
Cut the tubes	Crop saw	Goggles Apron	5mins
Measure where the hose hole should go on the middle section	Tape measure Whiteboard pen	-	5mins
Drill piolet hole for hose hole in main body	Drill with a metal tip	Goggles Apron	5mins
Drill the hole for the hose hole	Pillar drill	Goggles Apron	25mins
Measure the hole again	Tape measure	-	10mins
Re-dill if needed	Pillar drill	Goggles Apron	10mins ~
File hole	File	-	35mins
Return to blacksmith to start welding	-	-	-
Make a jig	Metal tube with a radius of 10'' Metal saw	Goggles	10mins
Start curving the middle section using the rollers	Rollers	-	20mins
Check against jig	Jig	-	5mins
Curve the middle section using fly press	Fly press	-	20mins
Check against jig	Jig	-	5mins
Hammer 1cm edges on each end of the curve section	Hammer Anvil	Leather glove	15mins
Placement of each section ready to weld	-	-	10mins
Measure with a set square	Tape measure Set square	-	5mins
Spot weld tubes on	Welder	Leather gloves, apron and jacket Welding mask	30mins
Weld the curve on to the tube	Welder	Leather gloves, apron and jacket Welding mask	20mins
Weld the curve to the back panel	Welder	Leather gloves, apron and jacket Welding mask	20mins
Check measurement	Tape measure Set square	-	5mins
Weld the front on	Welder	Leather gloves, apron and jacket Welding mask	20mins
Stop weld round the curve	Welder	Leather gloves, apron and jacket Welding mask	20mins
Drill holes in back panel for wall fittings	Drill with metal tip	Goggles	10mins
Return to school	-	-	-
Curl main pieces	Clamp Metal pliers	-	20mins
Bend main pieces	Clamp Metal pliers	-	10mins
Revisit to blacksmith	-	-	-
Draw on the horse head on front panel	Chalk	-	5mins
Weld on the horse main	Welder	Leather gloves, apron and jacket Welding mask	30mins
Wire brush the pieces	Wire brush	-	10mins
Weld the body pieces on	Welder	Leather gloves, apron and jacket Welding mask	1hr 30mins
Issue – ran out of body pieces	-	-	-
Wire brush the dirt off	Wire brush	-	10mins
Return to school	-	-	-
Cut more metal	Metal scissors Clamp	-	20mins
Return to the blacksmith	-	-	-
Finish welding pieces on	Welder	Leather gloves, apron and jacket Welding mask	2hr
Wire brush dirt off	Wire brush	-	10mins
Return to school	-	-	-
		Total Time -	3Days 12Hours 55mins

Risk assessment of the making process

Throughout my making process I have included briefs 'health + Safety' feedback sections but in industry every step would require a risk assessment to determine what is required for the safety of the employees.

Step	Equipment	Health and safety	Time taken
Consult blacksmith about cutting metal	-	-	2hr
Contact merchant Taylors school to use plasma cutter	-	-	3Days
Cut metal to fit in the plasma cutter	Hand held rotary cutter	Goggle Apron	30mins
Find alternative method to cut metal	Grinder	Goggles	20mins
Travel to Merchant Taylors school	-	-	-
Make 2D design of my net design	Computer with 2D design on	-	30mins
Plasma cut the metal	Plasma cutter	Tinted eyewear	20mins
Cut the main and body pieces	Snippers Stomp cutter	-	45mins
Return to school	-	-	-
Grind the edges of the metal	Grinder	Goggles	30mins
Clean off the dirt	Alcohol solution Scrap material	Plastic gloves	10mins
Draw on the markings for welding	Whiteboard marker	-	5mins
Mark 8" on the metal tubing	Whiteboard marker	-	5mins
Cut the tubes	Crop saw	Goggles Apron	5mins
Measure where the hose hole should go on the middle section	Tape measure Whiteboard pen	-	5mins
Drill piolet hole for hose hole in main body	Drill with a metal tip	Goggles Apron	5mins
Drill the hole for the hose hole	Pillar drill	Goggles Apron	25mins
Measure the hole again	Tape measure	-	10mins
Re-drill if needed	Pillar drill	Goggles Apron	10mins ~
File hole	File	-	35mins
Return to blacksmith to start welding	-	-	-
Make a jig	Metal tube with a radius of 10" Metal saw	Goggles	10mins
Start curving the middle section using the rollers	Rollers	-	20mins
Check against jig	Jig	-	5mins
Curve the middle section using fly press	Fly press	-	20mins
Check against jig	Jig	-	5mins
Hammer 1cm edges on each end of the curve section	Hammer Anvil	Leather glove	15mins
Placement of each section ready to weld	-	-	10mins
Measure with a set square	Tape measure Set square	-	5mins
Spot weld tubes on	Welder	Leather gloves, apron and jacket Welding mask	30mins
Weld the curve on to the tube	Welder	Leather gloves, apron and jacket Welding mask	20mins
Weld the curve to the back panel	Welder	Leather gloves, apron and jacket Welding mask	20mins
Check measurement	Tape measure Set square	-	5mins
Weld the front on	Welder	Leather gloves, apron and jacket Welding mask	20mins
Stop weld round the curve	Welder	Leather gloves, apron and jacket Welding mask	20mins
Drill holes in back panel for wall fittings	Drill with metal tip	Goggles	10mins
Return to school	-	-	-
Curl main pieces	Clamp Metal pliers	-	20mins
Bend main pieces	Clamp Metal pliers	-	10mins
Revisit to blacksmith	-	-	-
Draw on the horse head on front panel	Chalk	-	5mins
Weld on the horse main	Welder	Leather gloves, apron and jacket Welding mask	30mins
Wire brush the pieces	Wire brush	-	10mins
Weld the body pieces on	Welder	Leather gloves, apron and jacket Welding mask	1hr 30mins
Issue – ran out of body pieces	-	-	-
Wire brush the dirt off	Wire brush	-	10mins
Return to school	-	-	-
Cut more metal	Metal scissors Clamp	-	20mins
Return to the blacksmith	-	-	-
Finish welding pieces on	Welder	Leather gloves, apron and jacket Welding mask	2hr
Wire brush dirt off	Wire brush	-	10mins
Return to school	-	-	-
		Total Time -	3Days 12Hours 55mins

Each of these points on the time plan, required me to wear personal protective equitment or to consider the safety of others. This risk assessment is for the manufacturing process, I could also take a risk assessment on the final product to see whether it is suitable for customer contact



Overall there was many aspects of the making process including the cutting of the metal, the welding and the grinder process. Each of these required me to wear P.P.E, some of the other roles I participate in required PPE but I chose against it, due to the small chance of it causing an issue/safety fault

NEXT STEP

Now the risk assessment is completed I need to complete a industry + School. I also need to gather stakeholder feedback of my project

Step number	Stage	1 (low)-5(high) risk grading	Risk/ issues	Health and safety protocol
3	Cut metal to fit in the plasma cutter	2	Due to the process being free hand, there is a chance that the blade could cut through hands or even legs, if the metal isn't clamed and weighted down secretly before cutting. Metal can also splinter and spit up from the metal, causing cuts and scratches, cold lead to eye issues if a piece of metal lands near that are.	When cutting the metal, I wore goggles, and tied my hair back. I should have also worn an apron but didn't as I didn't feel I needed to. I could have worn gloves but I choice against it as I knew I would be required to steer the saw myself, and didn't want to risk messing up.
4	Find alternative method to cut metal	2	As the rotary cutter didn't successfully and cleanly cut the metal, I reported to asking a stakeholder to use a angle grinder. Like the rotary grinder if the metal isn't clamed and weighted down secretly before cutting. Metal can also splinter and spit up from the metal, causing cuts and scratches, cold lead to eye issues if a piece of metal lands near that are.	Where goggles to protect against any spits of metal, when cutting through the metal panels. Tie hair back Could choose to wear gloves
7	Plasma cut the metal	3	The plasma cutting I used had built in safety feature like the laser cutting out if the lid on the machine is opened, etc. However, the machine can still cause safety issue if not used responsibly. The harsh, bright light could cause eye issues if stared at for a long period of time.	The plasma cutter at the merchant and Taylors, came with safety features, which meant the machine was suitable for young children to use. For example, tinted, light cancelling screens, emergency off switches. And cut out systems to stop any cutting from happening when the lid is lifted up.
8	Cut the main and body pieces	3	To cut the metal, I used snippers and a jump cutter, snippers are manual controlled, and requires a force t cut through a material, however it takes lots of strength to cut through materials like mild steel, which could lead to muscular injury's. Using the jump machine requires a harsh force on the step to cut through the material, while there isn't any real safety issues with the machine, the manual labour required, muscular and skeletal injury's could occur.	Process requires lots of manual force, meaning that issues to do with muscular or skeletal damage for the individual cutting the metal.
10	Grind the edges of the metal	2	Same as 4	Same as 4
14	Cut the tubes	2	Using the crop saw is manual operated, and has similar issues to the use of the grinder or rotary blade - if the metal isn't clamed and weighted down secretly before cutting. Metal can also splinter and spit up from the metal, causing cuts and scratches, cold lead to eye issues if a piece of metal lands near that are.	Should wear goggles, ear defender, and a apron
16	Drill piolet hole for hose hole in main body	2	Drilling through metal could cause the drill bit to break and hit the individual, cutting or hurting the individual. The drilling could also cause similar situations issue like with the other manual controlled tools.	Goggles Apron
17	Drill the hole or the hose hole	2	Not clamping the metal down, before lowering the pillar drill, the metal pieces will attach and spin, which could cause cuts and scratches. Metal splinters can flick off from the drilling process.	Goggles Apron Hair tied back
19	Re-Drill if needed	2	Not clamping the metal down, before lowering the pillar drill, the metal pieces will attach and spin, which could cause cuts and scratches. Metal splinters can flick off from the drilling process.	Goggles Apron Hair tied back
22	Make a jig	2	To make the jig I cut a metal tube with a radius of 10", to cut it I used a metal saw, which did spit out little metal pieces as I saw, as well as it being a hand saw, which could lead to miss sawing and cuts.	Goggles Apron Hair tied back
23	Start curving the middle section using the rollers	2	The process requires lots of manual force to push the metal through the rollers, the machan also consists of many exposed clogs, meaning there is a hazard that could lead figures or clothes to get caught and hurt	Hair tied back Apron Leather gloves
25	Curve the middle section using fly press	3	This process requires manual force and see a handle being pushed round due to inertia, meaning that as the handle spins it gain speed and power, which if not controlled could hit the individual causing injury, or even concussion	Leather gloves Heard hat – optional
27	Hammer 1ch edges on each end of the curve sections	2	This required me to repetitively hammer a edge of a curve. This could cause muscular fatigue/ injury due to the reputation. As well as potential hitting hands or fingers .	Leather glove Goggles potentially
30	Spot weld tubes on	4	Welding relies on a extra heat gun, that warms metal wire and metals I, to connect the 2 materials . Bright light can cause lose of vision if looked at for long periods of time, as well as burning/ radiating skin, causing burning or skin dieses.	Welding mask Leather apron, jacket and gloves Earth connecter
31	Weld the curve on to the tube	4	Same as 30	Same as 30
32	Weld the curve to the back panel	4	"	"
34	Weld the front on	4	"	"
35	Spot weld round the curve	4	"	"
36	Drill holes in back panel for wall fittings	2	Same as 16	Same as 16
38	Curl main pieces	2	I used pillars to curve the metal round, it took manual force and some times the metal strip came out of the clamp. The edges of the metal was shape and became uncovenanted when trying to move and alter the strips	Hair tied back I could have worn gloves to prevent cuts etc
39	Bend main pieces	2	Same as 38	Same as 38
42	Weld on the horse main	4	Same as 30	Same as 30
44	Weld the body pieces on	4	Same as 30	Same as 30
48	Cut more metal	3	Same as 8	Same as 8
50	Finish welding pieces on	4	Same as 30	Same as 30

Making process and risk assessment, in school vs. in industry

Anthropometrics –

- In school I made my product o scale, so I could then test the prototype for more information on the feasibility of my product, such as weight and balance. I have also used real life measurements of my clients existing plastic hosepipe, which I used to refer to when design the sizes of my product, from the depth of the curve and the diameter of the hose reel curve. In industry, a similar process would be done, to accurately produce a product that fits the use of the human body, using 1st and 2nd hand research to find out about what sizes are available on market, as well as researching into who is purchasing these products and what average dimensions they have.

Aesthetics –

- Even though my final product I created has not been finished, as of yet, the overall look of my product fits with what my initial idea intended for it to look like. In models created, I changed and developed the look of the horse main, from small, thin pieces of metal, curled with pliers to larger pieces with a singular curl with a room for the piece to be welded at either end. In Industry, I would use resin to coat the final product, this will help keep the metal in a good condition for longer, when outside, as well as smoothing round ant sharp edges that might not have been grinded/ filed down enough. Along with the 2 part resin, the incorporation of copper leaf on the main and in key areas of highlight like the cheekbones and main area, to add colour and give it a very sophisticated, delicate hint of character to the product.

Testing + Evaluating –

- In industry to guarantee that the product is ok for human use and handling, the product. Before products hitting the market needs to go through standards verifiers to make sure that a product is suitable and safe. Tests including durability of the material used, and welding joints which connect the metal, weight with stranded by the product and testing for length of suitability of the finishes used. In terms of evaluating, industry relies on the feedback of stakeholders and target markets, for example putting the product up for sale in attest period, you see whether it is popular, and is turning enough income to cover manufacturing and transport costs. While in school I am also resorting to stakeholder and client feedback as a form of evaluation, this process has allowed me to develop and edit design to create the most suitable product prototype I could produce. In terms of testing, I use some testing process in the developing idea phase of design, but not during the making process, I will be resorting back to testing methods now I have finished my product to guarantee that my product is safe and is meant to do what it should.

Material –

- I used the material I would use if I was making my prototype in industry. I used 3mm mild steel for the main face and a variety of 1.5 - 4mm for the main and body pieces on the front panel. I might resort to using a cheaper material in industry like aluminium however, aluminium is thin and is easily bent and dented.

Manufacturing –

- The product I'm putting forward to create is a niche product and would remain handmade – meaning one – off product to keep the novelty and the uniqueness of the product .Due to the detail in the product, and the material it is made out of, requires the making process to be done by human manufacture. The process cant be industrial and therefore production mass/ batch amounts, without the incorporation of more people. Which then would compromise the design element – each is created randomly, different people have afferent perceptive on the same thing therefore the design will never look similar. One0 off product cost more then other types of manufacture, but due to the product being creates creativeness and niche idea, the product can be solid for a higher amount.

Cost –

The overall product didn't cost me anything to make as I didn't purchase the materials and I am not a professional and dint need to consider payments in my production. In industry this would be far from the case. I would have to consider the mass of which I wanted to make my product, and therefore would determine any initial costs, for machinery, and workers, as well as basic costs like renting an area, water, electricity and gas. On a smaller scale I would need to consider these things as well, as well as materials and other costs. Not working in a large scale, tends to make purchases for company's more expensive.

Client –

Even though every product is designed with a gap in the market in mind, therefore a target audience, this means that in industry, just like what I have had to do in school; To make my product I was constantly referring to my client to make sure what I was producing what she wanted. If I was making my product in industry, it would be made in one-off production and old b available for personation – for example the customer could choose the design on the front panel.

Size –

I made my prototype in school to scale, to what it would b e in industry. This allows me to true show what the product is I'm proposing to create as well as being able to reserve feedback on a full scale prototype from stakeholders.

Safety –

In industry every process needs to be analysed through a risk assessment where, hazards are stated and a method of prevention of injury for others is set in place, during my project I have highlighted heath and safety risks during my making process as well as adding a risk passement production and final outcome, where I analysed every stage I used where a heath and safety featuring was put in place. Due to the methods I used and the nature of my product I had an are of hazards I had to work around including minor inconvenience hazards to major health endangering process. In industry heath and safety isn't skimped especially when the process involves heavy machinery and other people.

Marketing and advertising my product

My product is very niche and, like in school, would be hand made in industry, making it very unquiee and Oringunle. Because of this, I would class the product of being very bespoke and feel the best place to advertise my product would be in magizens like country Living or period magizen as well as at craft fairs and events like art week.

Branding is a huge element to creating a succesful company. Having good brand awareness means that people begin to recanize what the brand has that can be benefited from.

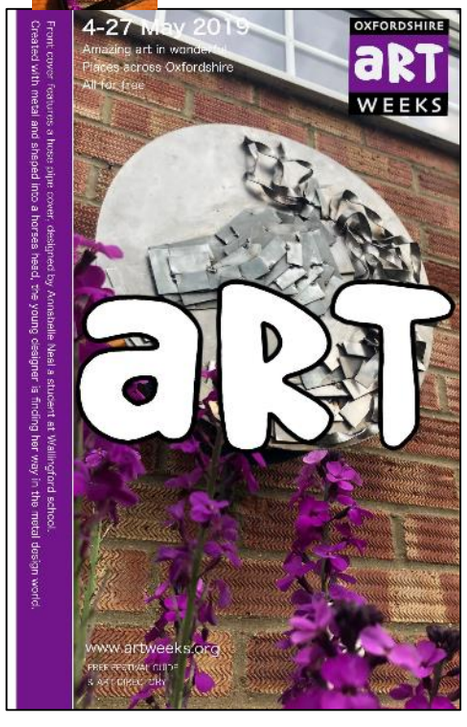
HORSE PIPE

I started with the idea to do a logo which was novel and self specific. 'Horse pipe' tells customers exactly what I would be producing however I feel this a more suitable name for the product.

HORSE PIPE

I did chose to develop the design however, and used the classic 'hose pipe colours' to theme my logo around.

i made these magazien covers by using a drawing app on my iPad.



In the future I would create a more suitable logo for my company, however due to the size of my company, name each of the products seems most appropriate.

Product:
My product is a hose pipe storage solution, that incorporate a more artistic sculptural approach appose to the existing plastic ones on the market. The main force of this product was to take something that existed and develop it to become more aesthetically pleasing and appealing to customers. The product in industry will come with everything already constructed and 3 screws and all fixings to allow the customer to hang up the product.

Price:
For me in school, it cost me nothing to make, just my time. As I got the metal for free as it was scraps left over at school and I out source somewhere to construct my project myself.
In industry I could charge around £200, but to construct the pieces and to purchase the materials, I would be looking at around £50 profit per product sold.

4 P's of marketing

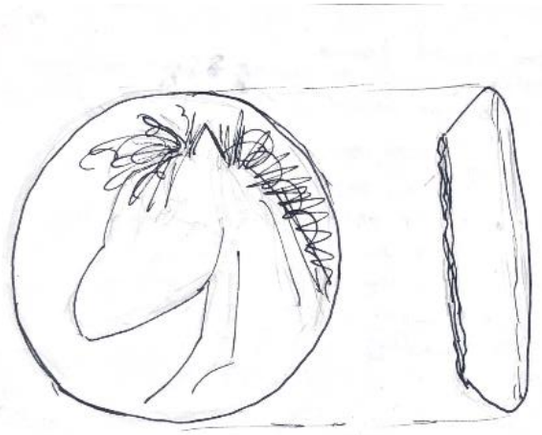
Promotion;
I would sell my product at bespoke sales sights, like country fairs and from my own website. Potential from magazines like the once here, however my ideals would ant me not to sell mass amounts of this product and allow for details to be altered by customers, so everyone made is different and unique.

Place:
As mentioned I would sell my product at craft shows such as Newbury or Henley country fair. I would do this because it is hand crafted and one of a kind and I would want it to go to someone who has a passion for art as well as practical use for it. Selling it in this ways limiest who will sell it, and the size of the target market, but the product created is so specific that this type of atmosphere is the most likely place to find such target market members.

Future developments

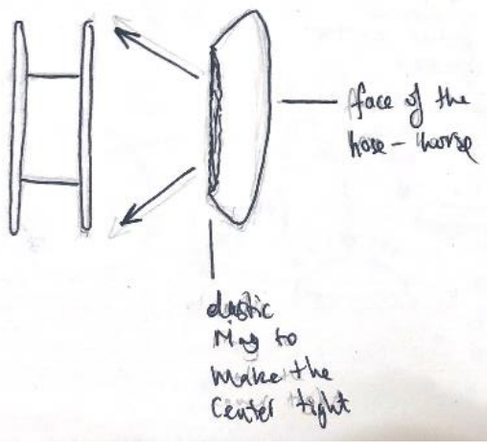
Future developments consider of developing the size, weight and shape of my current product. But it also would take a look about experimenting with materials and creating a 'soft case' version of my product.)

The product would solve many of the clients requirements as wells the specific and technical requirements:



development + after final Model - soft case.

- Soft case should be Waterproof and durable
- Come in a rang of colours and types.
- offers a cheapest alternative



To make a mine/ model soft case I'm cut a small circle and stitched a line of elastic around it.

	What did I need to consider?	How did I make sure it was completed?	Has the requirement been met?
Clients needs and wants, Technical and functional specification	The material needs to be suitable for outside – weather proof	I choose to use metal as, when the right metal is chosen it I long lasting outside facing the elements, it also can be enforced by finishes, including waterproof wax's etc. Metal can also just be left to rust, which does weaken the overtime however it is a nature and environmentally safe option.	✓
	Aesthetically and functionally practical	I made sure I followed the expectations of my client, taking inspiration from existing products and constantly checking whether the product will be suitable or its purpose – hold the weight of a hose pipe.	✓
	Considers the environment	I wanted to use recycled materials in my project, however, for my prototype I never used repurposed material, I used off cuts and scraps from cutting out the main body pieces. To create the face for the horse – the pieces for the horses main and body. In industry it would be easier to acquire pieces of repurposed material.	~
	Light weight and easy to move and mount	My product has turned out rather heavy, and I fear that this would be an issue for older clients. However, when the product is placed on the wall the weight. It is somewhat easy to mount it relies on the customer owning or knowing someone who can drill and mount the product on the wall.	✗
	Suitable for use by all ages	I believe the product is very niche and has not got a purpose for customers under the age of around 20, although they could purchase as a gift for peers – Even though, the product will come into constant with younger customers as many of the customers who would be buying my product are likely to have children or grandchildren, etc. Meaning the edge of the product needs to be smooth and not sharp, I do feel some of my edges are too sharp and could be grinded further.	~
	Multi functional – has multiple uses or multiple functions	The product that I ant o create, is meant to fill a hole in the market from a aesthetically pleasuring, multi functional garden tool to add character to any ones garden. Even though this was my plan, creating my design lead to be having to abandoned elements when considering time to construct the product, cost and weight overall.	✗
	Product would see for a reasonable amount considering the time taken to make it as well as materials - £150	In school I managed to create my prototype for under £50 as I didn't have to purchase any materials or spend any initial outlay costs on machinery and running of them. I also didn't have to consider costs of labour as I made it myself, only consulting a professional when needed. In industry these costs will have to be considered and as the product is a very detailed and hand constructed, the product will drive costs up. However speaking to a retail consultant, it is clear that I am in a position where I can be charging £150 + for my product.	✓

Unlike the prototype I created, the soft case model would be made from recycled clothes or even non extra materials like parachutes or suits and could even incorporate a on brand material, old/shaped reins. The material could also be fair trade, making it sustainably and ethically.

The product would be light weight, easy to use and appreciate.

Because they would be no sharps corners or edges, would be light weight and would be eye catching a novel the product would be suitable for all ages.

It wouldn't have a multi function, but it would be a suitable solution to covering up cheap, ugly hose pipe reels.

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