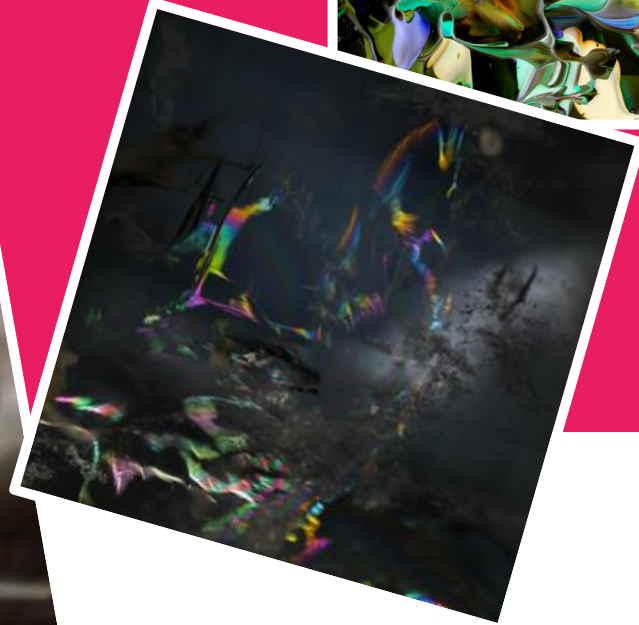
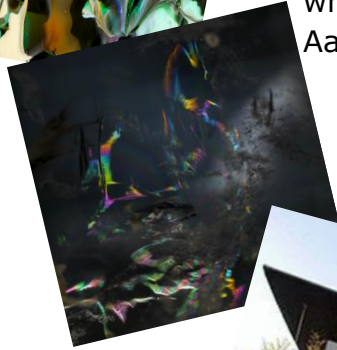
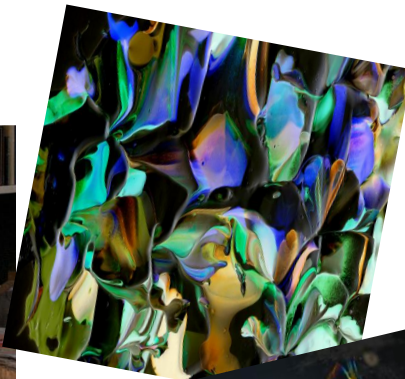


Abbie Williams



Richard Weston - AS Product Design

Richard Weston



Richard Weston lives in Dinas Powys, but was born in Leicester. Richard Weston is an architect, however he has created digital images based upon microscopic organisms. These images have been used to create fashion accessories and interior materials. He was the fashion's most unexpected designer, Richard is also the chair of architecture at Cardiff University. He has also written many books on architecture including Alvar Aalto and Architecture Visionaries.

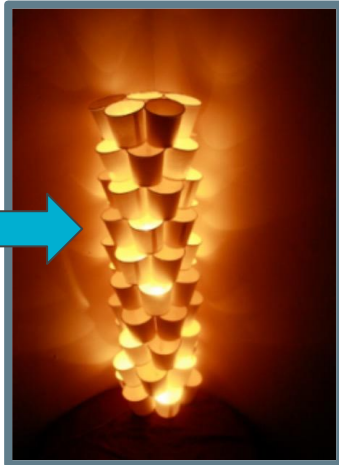
Richard's students at Cardiff University struggled to come to terms with his new found fashion status as he was their professor for architecture. However, they soon came to terms with his place in the fashion world as they became more aware of his love from pattern and design. Richard has also sponsored Newport University Fashion students with their project called "Frocks with Rocks" which he believed had very promising results. They intend to use his designs on dresses and fashion accessories. His prints have also been used on swimwear by Liza Bruce.

Lighting

I like this light as it very unique in that it's been made to look as if it's been carved out of a single plank of wood. I like it as it's extremely effective. I feel that the light inside the wooden structure would have to very powerful to ensure the light could be used.



This lamp looks as if it's been made out of cups. I really like this as it offers a different texture and element to the design itself. Also, it's use of circular objects allow for light to bounce around, hence spreading more light. The design itself looks quite simple however to ensure that light is distributed evenly across the design would have had to ensure that the shapes were all placed in a certain pattern.



These lights here look as if they are logs that have been changed into lights. These would be used for outdoor light which again is very different from the rest of the lamps on the page. I really like how you can clearly see the different textures and how it looks so natural.

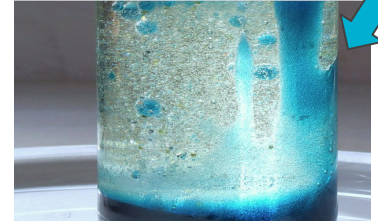


This table lamp is simple however, I find that it's still extremely eye catching. The simple block shapes give it a modern style. I feel like this would fit well in any room in a modern house. Again I really like how the design had used wood to create this modern effect.

I really like this light as it reminds me of a ball of wool. I like how there is the texture of the strings against the fabric background. I also really like how the light has contrast, the fabric is very light against the harsh colour of the string.



This lava lamp is extremely different from the other lights I have looked at. I like the use of the vibrant blue colour used in this design. I feel that this offers a modern twist to a light by the fact that there has been glitter added to the lava lamp. This lamp is a cylinder which I thought was rare which is why it caught my eye. I also love the transparent element to this design.

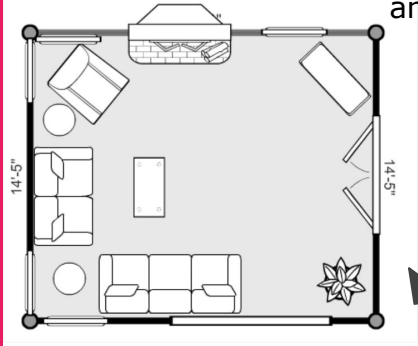


The detailing on this freestanding lamp is incredible, this is what drew me towards this lamp. The detailing allows for little pockets of light to seep through the material to produce this effect. The simplicity of the simple rectangular shape is delicate on the eye however it still remains effective. Compared to some other lamps this one is bigger in size and would stand on the floor however it still use the same simple design idea of blocked shapes to catch the target markets eye.

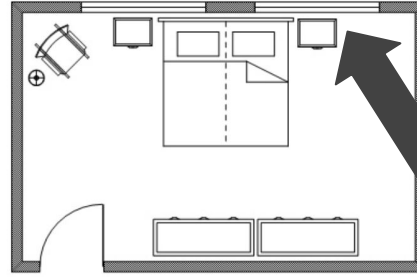


Location

However, if I was to design a free standing light I would replace the plant with the standing light. I would do this as I feel that having a free standing lam here would create more light within the room and it would add more creativity to the room.



If this was my living room I would place my table lamp by here, in between the seating.



In a bedroom I would place the lamp here because I feel that a light here would be useful for night if you wanted to read but also for the aesthetics of the room to make it look nicer.



It's not just a table lamp that could be found in a bedroom, you can often find a free standing lamp.



In a bedroom, the lighting by the bed is often situated on a table or stool. Its often placed here to complete its function that it was designed for.

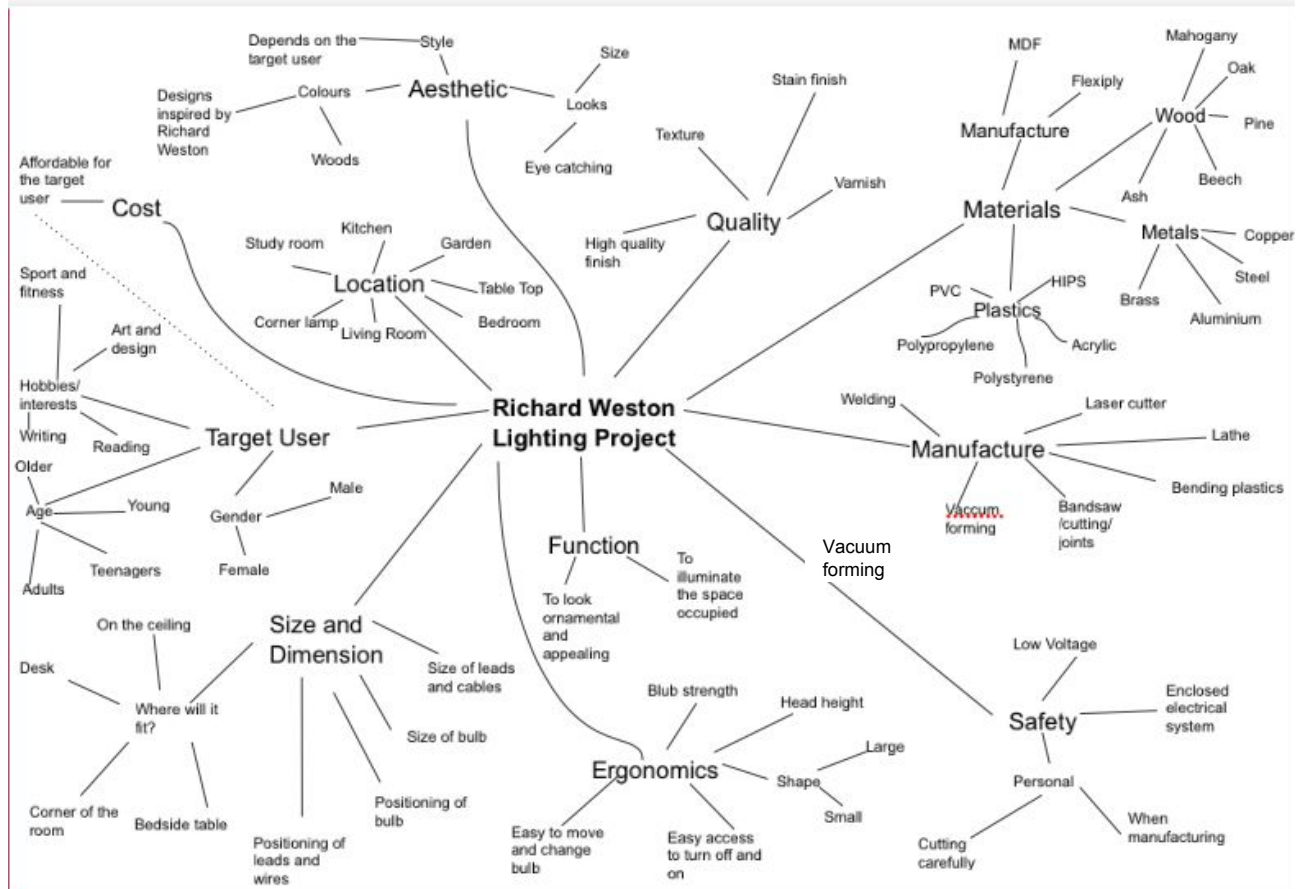
I think that a table lamp in a living room is situated often next to seating. I feel that a lamp makes a room and is the attraction and centre piece to a room when placed on a table.



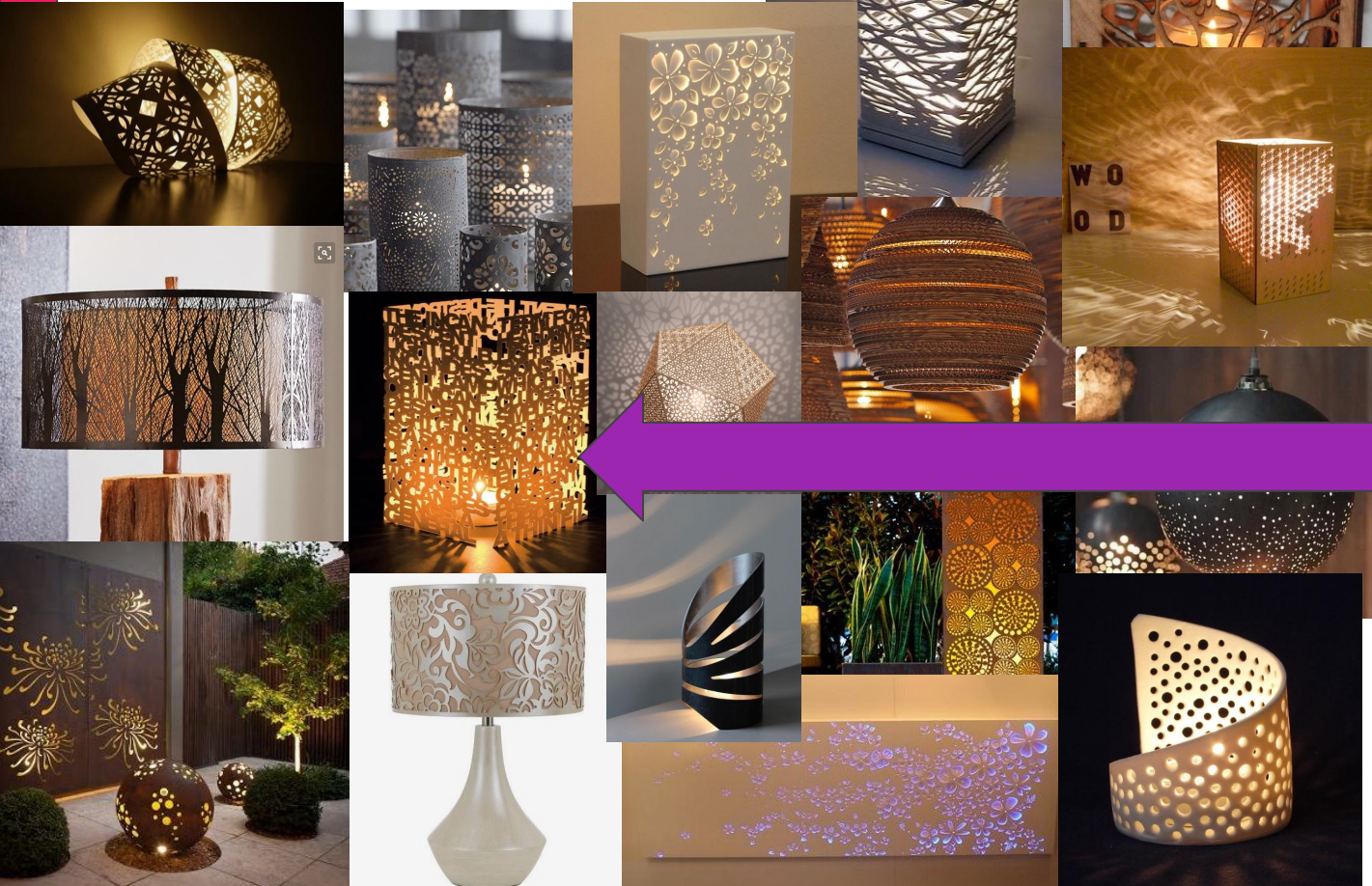
Specification

The light that I design must be inspired and include the images produced by Richard Weston. My light must be designed accordingly to my target users needs and interests. It's also important that my light has the correct illumination to be fit for its purpose. The light must also be suitable for its placement within the room or location. My light will include various materials as this will help me use a variety of manufacturing processes. My light must include an enclosed electrical system to ensure that its safe but this will make it easier to move around turn off and on. The light must be completed to a high quality and standard.

Brief: To design a lamp inspired by the works of the architect Richard Weston.



Laser Cut Lights



These are all examples of how we could use the laser cutter to enhance my lighting designs. Using a laser cutter allows for more complex designs to be incorporated into the overall design of the lamps. These laser cut lamps are also allowing for more intricate designs to be applied to the lamps, this is an advantage as we can develop more designs that are suited to the target user. By using the laser cutter we are able to create patterns such as flowers or even the use of lettering. I like the use of the laser cutting in the design of these lamps, I will be attempting to include this technique throughout my initial designs and final designs.

Product Analysis

Function

The function of this product is to illuminate the space in which it occupies. It's also been made to look aesthetically pleasing to the target user.

Materials

The materials used to create this lamp are wood, this is most likely to be oak or a similar type. Also, a wooden frame has been used to hold the various blocks of wood up above one another. Furthermore, a stain has been used to create this effect on the wood itself.

Estimated Cost

The estimated cost of this lamp would roughly be between £25 - £50. This is estimated as it has a high quality finish to it and could be seen in a higher end shop



Target User

The target user for this lamp could be an adult of either gender, who is into their modern interior design. The target user must have a good eye for rustic modern interiors.

Construction

This lamp has been constructed using screws to attach the the wooden blocks. In order for the light to travel through the blocks a laser cutter must have been used to create the squares in the centre.

Location

Ideally the location of this lamp would be in a living space for example a kitchen or sitting area. This would have to be placed on a high work surface as its size appears to be quite small therefore to have the impact which was intended then it must be placed off the floor.

Target User



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My target user is a young female who is aged 23. She lives in her apartment in Cardiff with her partner who is a trained carpenter who earns £17,000 - £35,000 a year. Her passion for design is evident as she has an eye for cutting edge design which can be bought on a budget. Their apartment is well decorated with a mix of expensive items and lower end items. Currently she's studying on the job as a graphic designer, however, her and her partner share money between them. As a hobby she enjoys traveling around the world, when travelling she enjoys taking photographs of scenery, which has developed her love for nature even further. She shops on a weekly at Morrisons, with the odd treat from shops like Waitrose. On occasions when special events take place, she will eat out at various restaurants like Valentino. She also spends money on subscriptions for makeup , like Benefit, Smashbox, Becca and Anastasia.



Target User Questionnaire

This was a questionnaire that I put together to enquire about what the opinions of the target users are about the light.

What type of light do you prefer?

Pendant Light Desk Light Free Standing Decorative Light

How much would you purchase a light for?

£10 - £20 £20 - £30 £30 - £40 £50 +

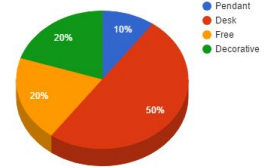
Which one of this locations would you prefer to locate your light?

Bedroom Living Room Study Kitchen

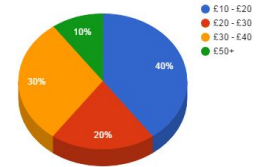
What materials would you prefer a light to be made from?

Wood Acrylic Metal Variety of Materials

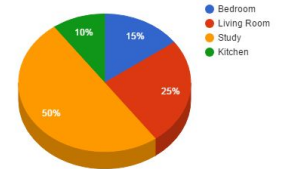
Light Type



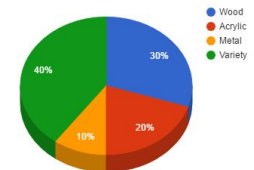
Price



Location



Material



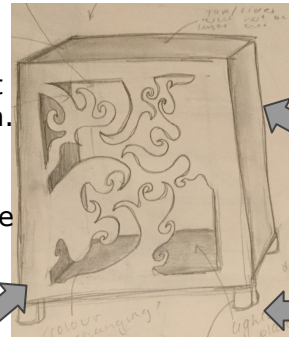
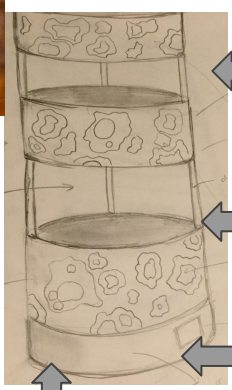
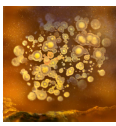
From this I was now able to see what was ideal for my target market and what they wanted from a lamp. It gave me information such as what was the ideal location for the target user, which was important because it will give me some indication during the design stages. Also, I was able to design lights using the ideal materials preferred by the target user, meaning that it would be ideal for the target users as required in the specification.

<u>Order of Importance</u>	<u>Initial</u>	<u>Detailed</u>	<u>Testing in Design</u>	<u>Testing in Manufacturer</u>	<u>Testing after Construction</u>
Most important Function	To help illuminate the room. To be a decorative feature.	The light must be able to provide enough light in order to allow the user to sit comfortably with the decorative light on. The light must also incorporate the designs of Richard Weston in order to make the light aesthetically pleasing.	The top 5 designs will be shown to a group of individuals that would be the typical audience. They will be asked whether they think the light has included the images by Richard Weston. These comment will help to improve the design.	To test in manufacturer test all the components before hand.	The light will be placed in the room, where 3 or 4 others will be. They will be asked whether they think light gives off a sufficient amount of light and whether the light is easy to use.
Aesthetics	Design to a modern taste. Design to include Richard Weston designs	The light must be designed with the idea of modern taste in mind, clean edges and curves. The light must also include the designs by Richard Weston whenever possible.	To test the aesthetics, the group of individuals will be asked whether or not they think that the light includes the Designs by Richard Weston and whether they think that the design is modern and too their taste.		The light will be placed in a room and the focus group shall be again asked whether or not they think the design included the images of Richard Weston and whether the light is to their taste.
Target User	Suitable for the target user which is a young female who is a graphic designer	The design should include a modern element with a female twist to it, as the target user is a young female who lives in a new apartment. The design must also include the designs by Richard Weston as she has developed an interest in these patterns as a budding photographer.	The top 5 design will be shown to the focus group of about 4 individuals, where they will be asked what they like about the design and whether they think that the design is suitable for the user.		After construction, the light will be shown to the target group and ask them whether they think that the light is appropriate for them and easy to be used by the target user.
Location	Able to be placed in a bedroom as a decorative light	The light will be placed in a bedroom within the apartment, therefore it must be design with the colour scheme of her apartment in mind.	The focus group will be shown the top 5 designs and asked whether or not they think the design is suitable for placement in an apartment.	Test the different materials in different locations.	The light will be placed within the location, individual will be asked whether they think the design is appropriate for location.

Ergonomics	<p>Easy to be used by user</p> <p>Easy to be used in it situ.</p>	The light should be easy to be used by the user when the light is in situ. The light must be lightweight as it may be moved around the room depending on where the target user would like the light to be placed.	The top 5 design are again shown to the focus group where they will be asked whether or not they would find any aspects of the design difficult to use.	The weight of the light will be tested throughout manufacture as well as the components being checked for easy use.	The light should be placed in situ where a focus group will be asked to use the light and give feedback of how easy it is to use this will allow for improvements to be made.
Safety & Quality control	<p>Safe to move/use around if needed</p> <p>Finished to high standard</p>	The light must be safe to use and when being manufactured it shouldn't includes sharp edges and wire should be secured safely. This will insure that the light is finished to a high standard.	The top 5 design will be shown to the group of typical target users where they will be asked whether they think the design has smooth edges and if the wire are hidden away appropriately.		After, the light will be shown to the focus group after manufacturer, where they will be asked whether or not they think the light is safe and all the wires are away safety but still useable.
Materials	<p>Made of variety of materials.</p> <p>The materials used must be of a high quality.</p>	The light must be made using a variety of materials, including timbre which must be appealing to look at and has a long lifetime which would stop the lamp looking different. The light must also used high quality fabric. Where possible recycled materials are to be used to keep cost low and not to damage the environment further.	The top designs shall be shown to the same focus group. They will be asked whether they think the materials are appropriate for the lamp and whether they like the materials chosen	Test the materials that will be used in the lamp, testing the capabilities and more.	The light will be placed in location and will be shown to a few individuals, where they will be asked if they think the materials are suitable for the location and for the lamp.
Quality and Finish	<p>Finished to a high standard.</p> <p>Be pleasing for the eye to look at.</p>	This light should be designed and manufactured with quality and finish in mind. The materials must has the appropriate finish to them to ensure that they last the lifetime of the light, this would mean any preserving finish on the wood must be used. The light must have the eye pleasing patterns of Richard Weston included.	The designs will be shown to the target user focus group, they will be asked if they think the finish is to a high quality.	Test the finishing techniques. For example, testing the finish of the varnish.	The light will again be placed in location and will be evaluated by a group of typical user on whether or not they think the finish is appropriate.

Processes and construction	<p>Must have quality checks</p> <p>Should include a variety of different techniques and processes.</p>	<p>When the light is being produced it must undergo quality checks after each stage to ensure that it meets the high quality finished expected. Furthermore, the light should be manufactured using a range of different techniques such as joinery, fabric transfers and any others that may be required.</p>	<p>The top designs will be shown to individuals and they will be asked whether or not they think the light includes a variety of techniques.</p>	<p>Test the different ranges of techniques before using them, in the design.</p>	<p>The light will be shown to the users and they will be asked to evaluate if they think the light has been made to a high quality.</p>
Least Important Cost	<p>Reasonable price for the target user.</p>	<p>To ensure that the light is cost effective for the target user, you will ensure that the light is made with lower cost material so that it can be priced reasonably for the target users price range.</p>	<p>5 of the designs will be given to a focus group. The individuals will be asked what price they would pay for the light.</p>		<p>After the light is constructed, the light will again be shown to the target user group, and they will be asked individually what price they would be willing to pay for the light that has been manufactured.</p>

Design Ideas



This design meets the specification for function because it will illuminate the room easily.

This lamp doesn't meet all the points set out in my specification.

I don't think is lamp is designed suitably for the user. This lamp would be made from oak.

Will be made from beech, this meet meet the specifications as it will be able to be purchased by the target market easily.

Weston's design will be laser cut into wood.

This lamp would be made from beech.

The detailing on the front of the lamp will be produced by the laser cutter.

This lamp is a suitable size for the location specified. Also be designed so it suitable to fit with the target user's style.

This light would be simple to use as there aren't any complex parts.

Ideally located on the bedside table.

This would also be difficult to make due to the curves.

Inside the lamp, there will be patterns printed onto fabric.

The circuit will be enclosed at the bottom of the lamp to ensure safety requirements are meet.

Richard Weston's pattern will be printed onto fabric and stretched over the bulb to project the pattern.

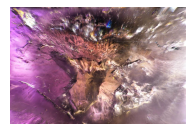
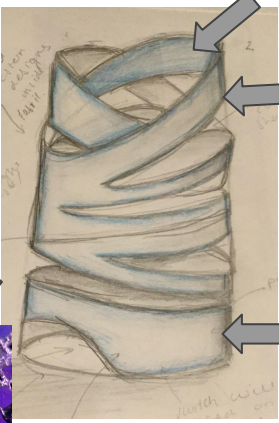
This meets the target user aesthetics needs, because it's a clean and sharp edges - modern.

This lamp would be made out of acrylic and cut on a laser cutter. This is suitable for the target user.

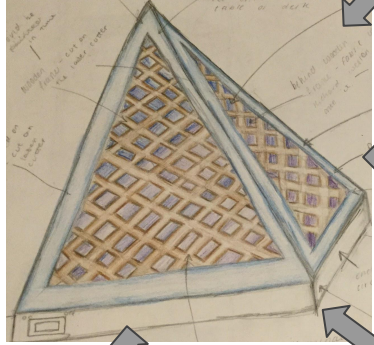
This lamp would be difficult to manufacture due to the curves.

There will be various techniques used to create this lamp, which is one point on the specification.

This lamp is very unique compared to the others lamp.



Design Ideas



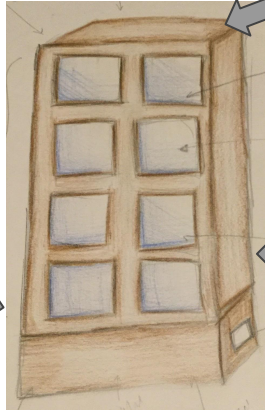
This lamp is suitable as it uses the images of Richard Weston well, they are printed on fabric behind the frame

This is made from a wooden frame, with acrylic triangular sides and an acrylic box base.

This lamp may have safety issues as there are several sharp edges which could harm the user which might require some development if this was to be taken further

The electrical circuit will be housed in the acrylic base. This will allow the product to be safe to use and be at no risk to the user.

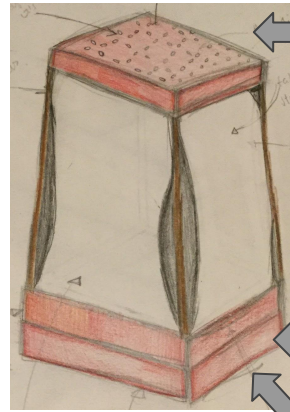
This design here is extremely simple, however, it meets the safety points in my specification. As all the electrics are housed inside



This would be made from pine and then the design would then involve using heat to transfer the design of Richard Weston onto fabric to display in the windows.

This isn't a very aesthetically pleasing design.

This would be ideal for the location of a table top.



Fabric sides, stretched to project the light through the Richard Weston's image.

Materials used are cotton, as it has it prints well onto an acrylic base and top.

This design meets its function as it would illuminate a room well however, it's not really as decorative as it could be

I don't like this design as I feel that it may not be designed to the tastes of the target user.

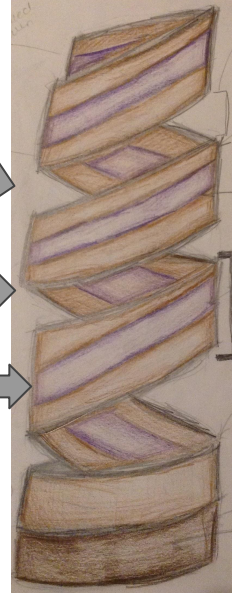
Cotton would be used, with image transferred onto it between the layers of the wood.

This would be suitable for the location specified in the specification.

Switch hidden at back along with circuit hidden in base of lamp to ensure it's aesthetically pleasing.



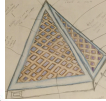
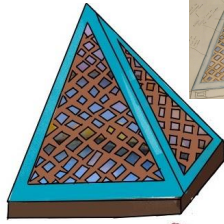
This would be made from wood, flexible wood in order to achieve the curves.



Digital Initial Design Ideas



Seeing this in the digital form has made me realise that this would be a hard design to create due to the curves and acrylic for material.



I can see from this digital sketch that this idea is going to be difficult to create by I do like how the colours contrast well.

Using Concepts, I drew my initial design ideas. I did this by tracing over my initial sketch from my sketchbook. I then added the colour using the air crush /maker tool. Using this has allowed me to get a better idea of what the overall finished product might look like.



I personally didn't like this design when I completed it using concepts, I found that the idea wasn't that aesthetically pleasing to look at



After I finished this digital version of this idea, it became clear to me that it would have been very difficult to construct as I would have to bend the wood. Also, I feel as though it's pattern isn't very appealing to the target user's interests.

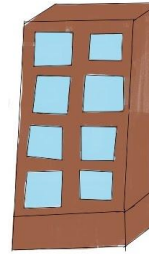
From this digital sketch, I can see that this design with development could work the best compared to all the other designs.



When completing this digital version of this idea, I found that it was going to be increasingly difficult for the pattern of Richard Weston to be used - hence why I don't feel I am able to carry this idea forward.



I really liked how this idea has turned out after using concepts - however, this would need a lot of development.

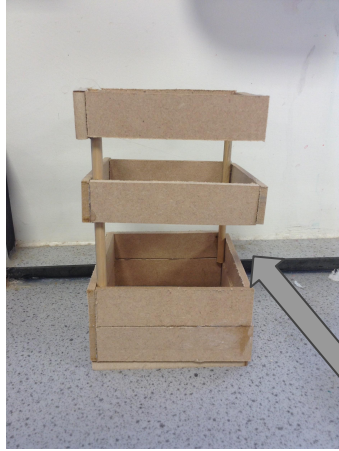


This design could have benefited from having the wood grain as without this the design looks flat and unappealing to the target audience.



After looking at this for a digital perspective I didn't like this idea and decided that it didn't really fit the

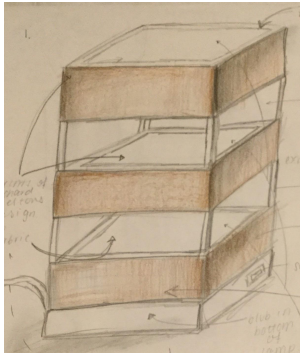
Initial Model Making



This model was made using scraps of wood and spare dowel. Meaning that it was simple and easy to put together a model with. However here there are only two dowels I would like to use at least 4 dowels in each corner.

The purpose of this model was to give me an indication of how my final outcome might look and how it might be constructed.

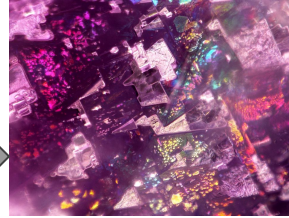
The bottom layer will house the electrical circuit and bulb, so the light shines up through the fabric (projecting the image)



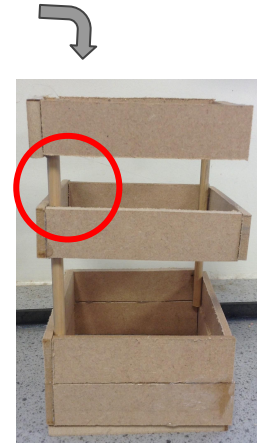
The lamp will have multiple layers using dowel to separate these layers which will effectively house the cotton with the Richard Weston image on them.

Evaluating this model now, I think that I am going to have to find a better way to attach the dowels instead of on the inside as this is going to obstruct the fabric with the image on.

This digital design highlights how the fabric will be used incorporate the image of Richard Weston into the lamp.



Thinking further ahead to the construction of the lamp, I am thinking about the fabric sitting inside a frame to be placed inside the top of the lamp.

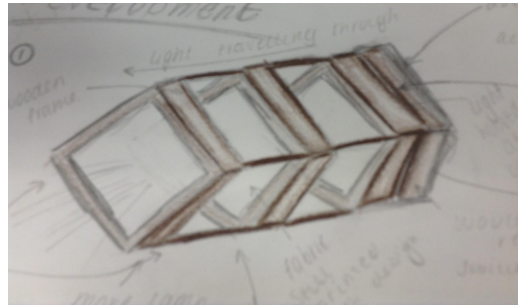


I am going to make a further model, this will allow me to develop my design idea further as currently the design needs to be developed in order to make the improvements that are required.

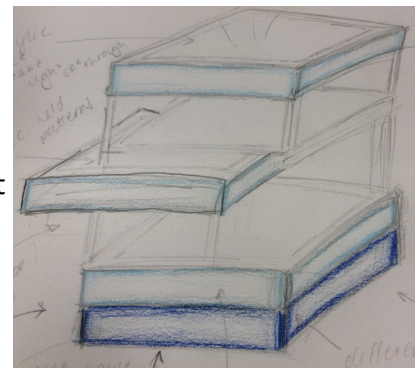
I would like to make the next model to scale as this will allow me to look at the height of my lamp and how big the lamp is actually going to be and whether or not the sizes are correct for the location intended.

Development of Design Ideas

I decided that I would turn the lamp onto its side as a initial development. However, I felt that this wasn't suitable for the target audience and didn't look aesthetically pleased to the eye.



Developing the previous design further, I turn the lamp back up onto its base. I looked at the possibility of having the layers staggered.

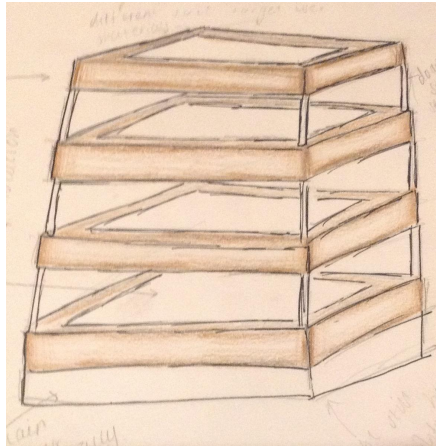


I developed the idea further by adding another layer to the design. This would mean that the light would be taller and slimmer, which would look more aesthetically pleasing for the target user.

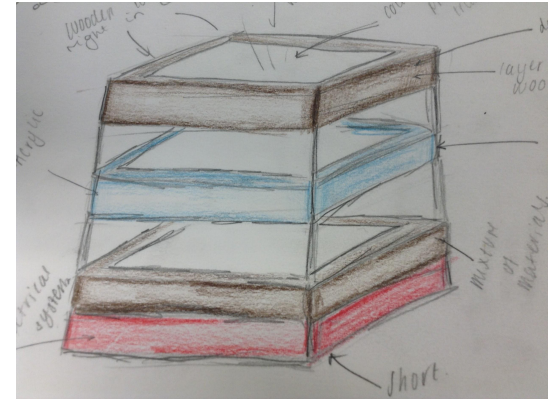
Looking at this design in acrylic doesn't give the same appeal as the wood.



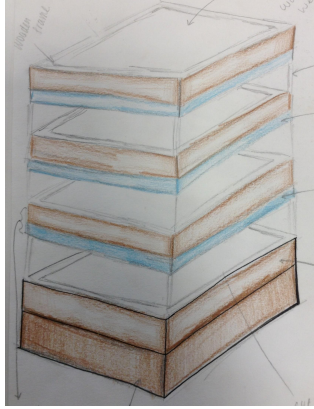
Digital sketch of my initial model with an extra layer done using Concepts.



Next, I thought about developing the materials further to look at how the lamp could incorporate more than one material. I liked the idea of using wood and acrylic together.

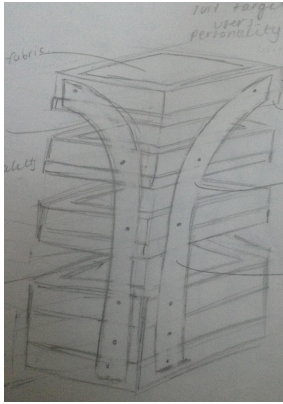


Development of Design Ideas

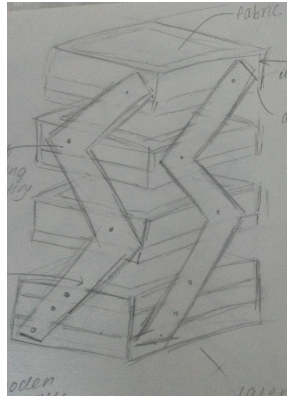


I decided as another development to add acrylic to my design, this will add another feature to the lamp. The acrylic will be attached to the wooden layer from the original design. Adding the acrylic will add more height to the lamp with was one problem that the original design had. In further thinking the dowels in the corners of the wood and acrylic will weaken any joints being used meaning that the next development will require looking at how the layers will be separated.

This external frame idea is different as it curves making the lines softer and less harsh suiting the target user better. This curve would be achieved using the laser cutter meaning that Laserply would have to be used. However, this would allow me to use my CAD/CAM skills.



As a second idea I decided to make the frame zig zag shape to add more aesthetic appeal to the lamp. However, as the first idea this still had harsh lines which I felt wouldn't work well with the target user's taste. It would work better though as it's fixed at more than one point.

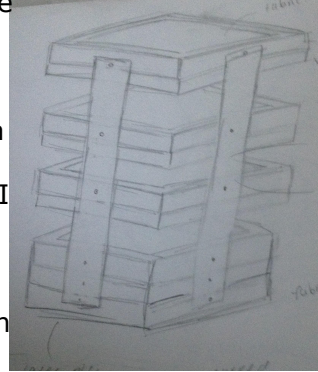


This is a digital sketch of how the acrylic will be used in my design. I drew over my model to create this rough sketch.

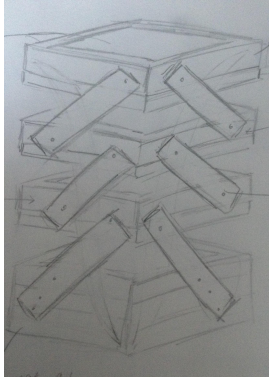


As a further development to the design, I decided to move the dowels from the corners into to the middle. The aim of this was to strengthen the joints at the corners, but still allow the layers to be separate. Evaluating this design further has made me come to the conclusion that dowels might not be the best way to separate the layers.

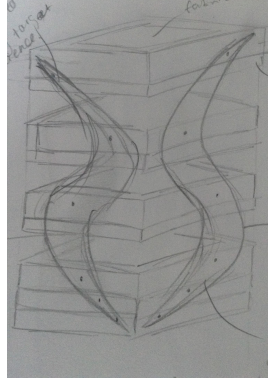
Due to the fact that the dowel aren't necessarily the best way to separate the layers. As a further development I decided to remove the dowels and replace them with a frame of the outside. This is one of the ideas I had and it's very simplistic and doesn't look that aesthetically pleasing. Also, the harsh lines within the frame doesn't fit the personality of the target user.



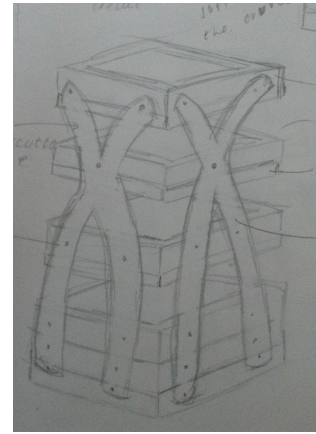
Development of Design Ideas



This external frame is different from the others as it works in 3 separate parts compared to the others which are 1 whole piece. However, this design like previous involve harsh like which aren't suitable for the target user.

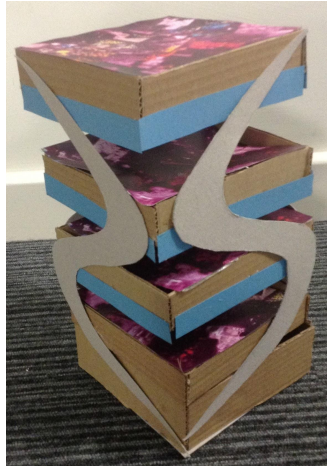


In this design I like how there aren't any harsh like, this would have to be done on the laser cutter in order to get the shape accurate and allow for the lines to be as soft as possible. This would have to be made from laserply but it will have enough strength to withstand the weight of the layers

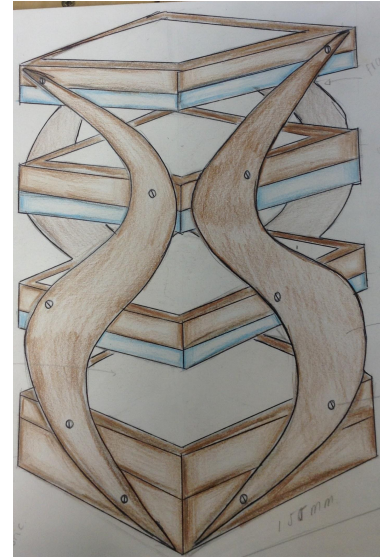


The final idea is again very suitable as it has soft lines which are suitable for the target user and could be achieved simply using CAD software and the laser cutter. However, I am concern about this frame hiding too much of the fabric which is the main feature.

This is the scale model of how the lamp is going to look. I think that this external frame is still the best choice as it not to harsh and doesn't detract from the main focus which is the frame. I used cardboard to do this as it was quick and could be constructed easily.

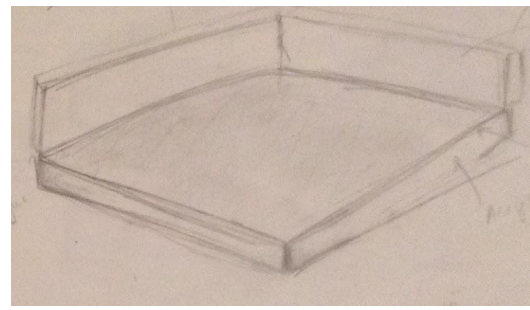
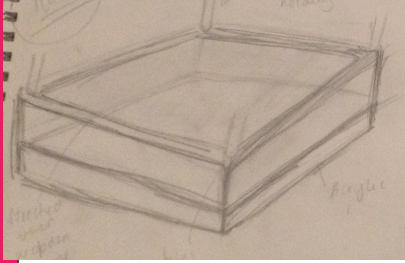


After looking at the various options for this external frames I decided that the 'S' shaped frame would be most suitable as it will support various area on each layer but also has the softest edges making it more suitable for the target user. I think that adding a frame will give the lamp another aesthetic appeal whereas the dowel would have been too simplistic and not added much to the overall finish of the product. I also feel that this 'S' shaped frame will not detract too much from the fabric with Richard Weston's image on it which is the main feature within the lamp itself.

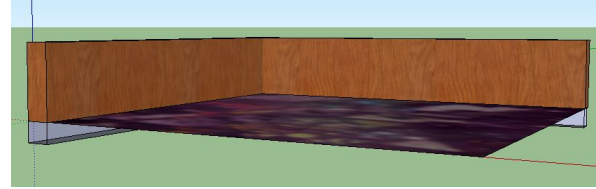
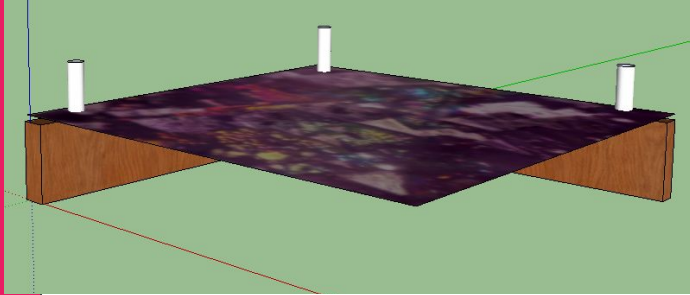


Development of Design Ideas (Constuction)

The fabric would have to have a strong pattern on it in order for the fabric to stand out. This idea uses dowel to hold down the fabric over the wooden layer. There will have to be hole to allow the dowels to pass through the fabric in order for them to be attached to the light. This wouldn't be the best idea as it means that the fabrics appearance would be affected.



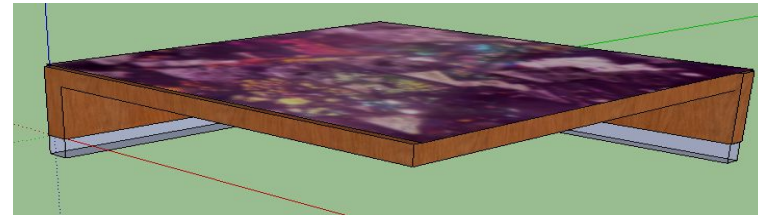
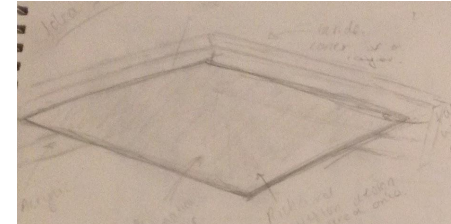
In this idea the fabric would have to be glued to the wood and the acrylic at each layer. The fabric would be sandwiched between the wood and acrylic. The problem here would be that the image wouldn't be visible to the user at first glance. The sandwiched idea wouldn't be the idea as the fabrics wouldn't be seen hence the image of Richard Weston wouldn't be seen (this was our brief)



Reflecting, on these ideas for construction (in terms of fabric), I have decided that pinning the fabric to a wooden frame would be the best option as it would allow the image to be seen clearly.

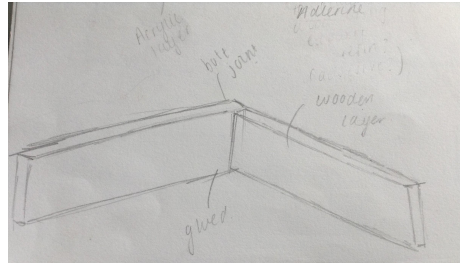
By allowing the fabric to be pinned into the wooden frame will mean that I don't have to put any holes through the fabric or anything that would affect the fabrics appearance.

The fabric pinned into a wooden frame. Would allow the image to be seen at first glance, compared to other ideas where it cannot be seen. This would work well as the fabric would be stretched allowing for light to travel through. This would be the best option because it would mean that it can be done quickly and still have a good quality finish.

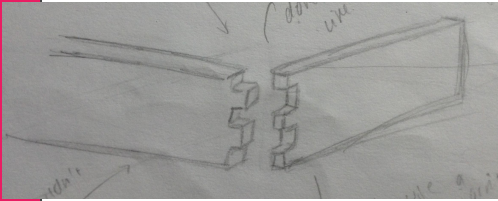
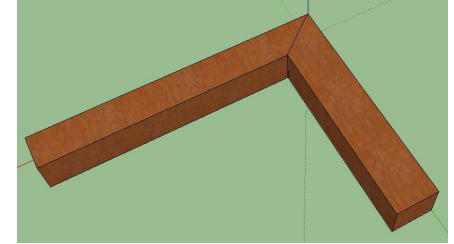
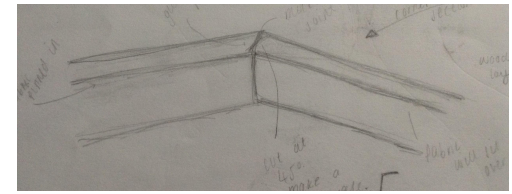


Construction development - Joining Wooden layers

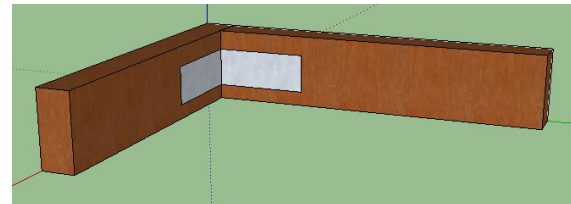
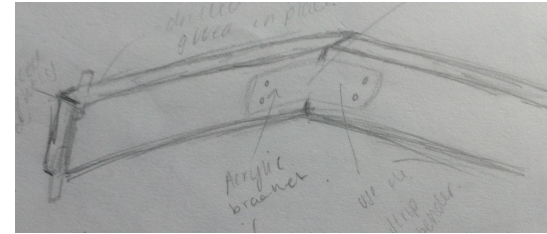
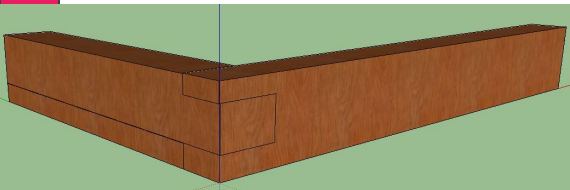
There are various joints which could be used to create the wooden layers. A butt joint would have been the simplest option to create the layers. However, this would not have looked appealing as it's very basic.



Another option is a mitre joint. This would be a better joint to use as it will be a better as it will cleaner finish overall. Using this joint would be better than the butt joint as it means that I am able to show more skill. This would require a 45 degree cut on both lengths - when glued together will form a 90 degree angle.



A dovetail joint could be used here to join the wooden lengths together. This would be intricate and aesthetically pleasing compared to both a butt/mitre joint. However, this would take a longer time period and would be harder to produce, as I haven't attempted a dovetail joint before and this would require multiple.

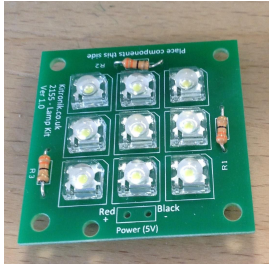


A different way of joining the lengths together could be by using a bracket. You could use a metal/acrylic bracket on the inside of the box where the two lengths meet. This would make sure the join was strong but it would also make the layers heavy meaning the external frames would struggle to hold the weight. Also, it could be hard to find a bracket suitable.

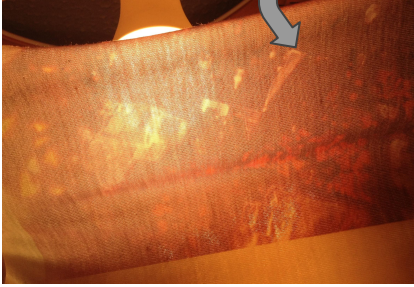
Light Sources Research

6"6 Led Light board

is small and would be able to produce enough light ideal for any lamp. This lighting source is cheap as they can be purchased for around £1.90. Also, this type of light for my source as it would fit perfectly in the base of my lamp. This has a USB cable which would be ideal for both the location as it would ideally sit on a table and the target user as a young person, USB plugs are always at hand.



During testing, this light was bright which was excellent as it would give off a suitable amount of light for it's function. It also wasn't too dull that it didn't shine through half the pattern.



An **energy saving light bulb** typically costs around £3.92. However, this would need a power pack in order to work in the lamp. It's not as expensive to run and would work well with any bigger style lamps. In my lamp this type of source wouldn't work well as its too big and would be difficult to mount inside the bottom layer. Although this would potentially produce enough light for the lamp, it wouldn't be as practical to the target user as it would require access to the main electricity source whereas a USB cable would allow them the ability to plug into a laptop or PC.



LED Strip Lights

This form of light source would typically cost around £8.99 which isn't highly priced. However, these are more expensive than the simple 6"6 LED light board. An advantage to this lighting source is that it has the flexibility to be wrapped around objects, and that it's able to change it's colour which would be a bonus to any lamp. During testing I found that these weren't suitable as I didn't require length as my light source is situated at the bottom of the lamp. Also, the brightness was strong however, the colour changing aspect meant that the patterns wasn't lit up as well as it could have been.

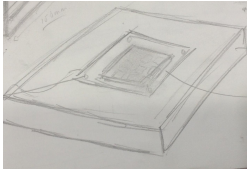




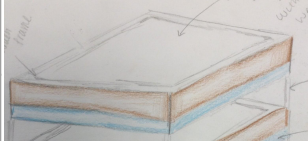
Wireless lighting source

This lighting source is expensive because it's wireless. However, the strength of this lighting source is that it uses a remote to turn it on meaning that the user isn't required to move. Also, you are able to purchase colour changing ones too which again adds a further feature. This wouldn't be suitable for the design because they are too big for the lamp itself. Also, the light colour wouldn't always give off the best light as the pattern used is extremely vibrant in colour meaning that the colour of the light might be lost. I wasn't able to test these as they weren't easy to get hold of.



Materials Selection

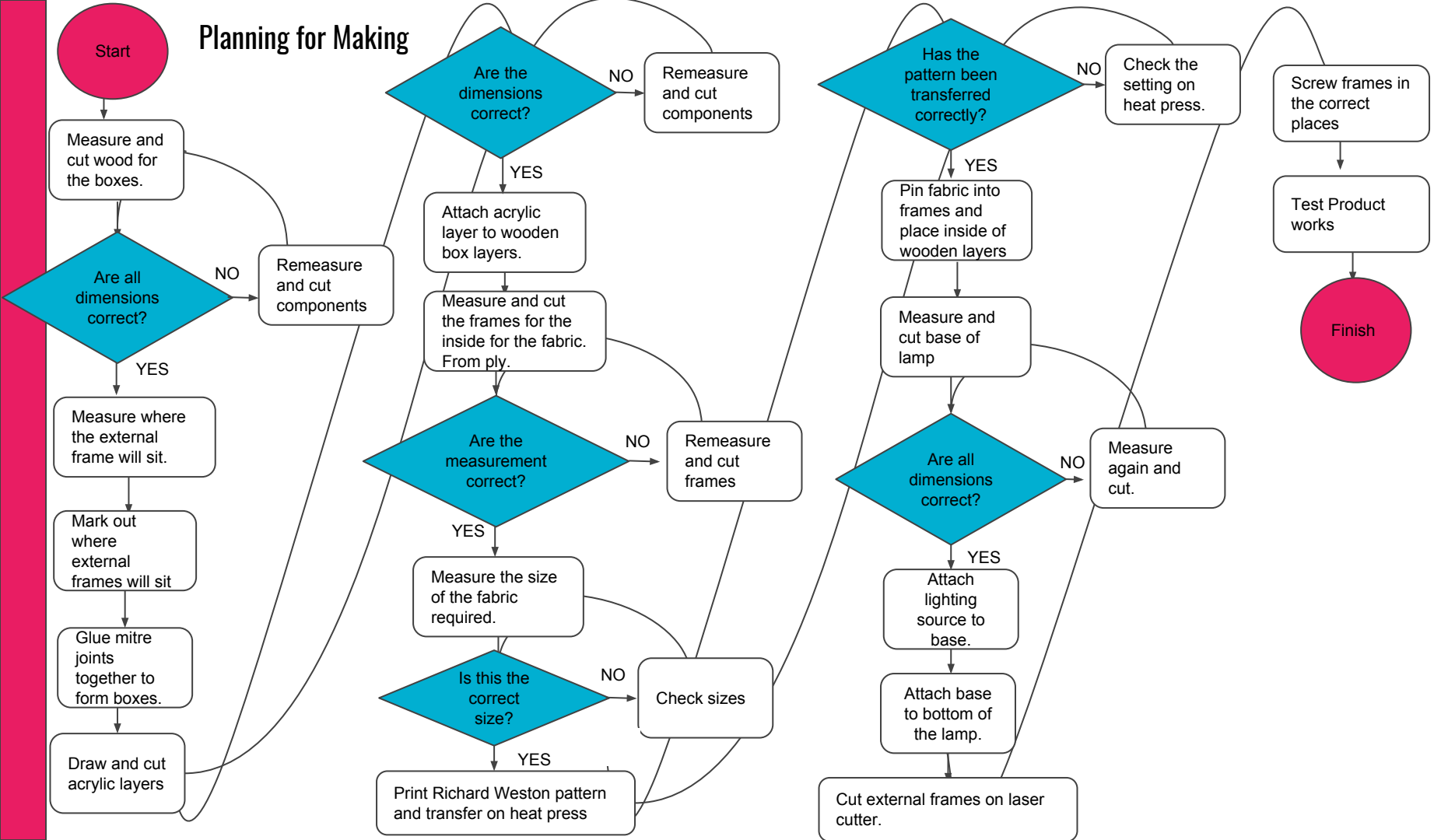
Component	Possible Material	Advantages	Disadvantages	Cost	Workability/ Stability	Score (0/10)	Conclusion
Light Source	6'6 LED light board	<ul style="list-style-type: none"> • Small and simple to construct • Produces enough light • Uses USB plug 	Doesn't have any fancy features.	Low	This is a suitable material as it low cost and can be fitted quickly without to much hassle.	8	<p>6'6 LEd Light Board - I chose this as it was the cheapest of lights and was most suitable for my light as I didn't need anything fancy like the colour changing strip lights. Furthermore this produces the correct amount of light required.</p> 
	Energy Light saving bulb	<ul style="list-style-type: none"> • Don't require much power • Aesthetically pleasing • Warm light is produced 	Expensive to buy Size can be issue in the design	Med	An Energy saving bulb wouldn't be suitable for this design as it's too big. However, I could potentially mount the bulb on its side.	6	
	Wireless colour changing bulb	<ul style="list-style-type: none"> • Doesn't require user to move to lamp • Offers different colours depending on the mood 	Expensive run Requires extra part to be brought in order for the lamp to be used.	High	Wireless Colour changing lights would be suitable for this lamp as they add an extra aesthetically pleasing feature to the light. However, due to the cost they would be out of the price range.	5	
Pattern	Fabric (nylon)	<ul style="list-style-type: none"> • Can use the heat press to print image onto • Easy 	Could take time for image to transfer onto.	Med	Would be suitable as it could easily be pinned into the frame.	8	<p>Fabric (Nylon) - This was most suitable as it meant that I could transfer my image onto the fabric without hassle, also it would be easier to attach to the frames rather than acetate.</p> 
	Acetate	<ul style="list-style-type: none"> • Can easy to print image onto 	Wouldn't be able to attach easily	Low	Easy to use however, it wouldn't be easy or that suitable to attach to the lamp.	3	

Frame	LaserPly	<ul style="list-style-type: none"> • Able to be cut on laser cutter. • Still strong 	Could leave a black edge when cut using a laser.	Low	This is suitable because it can be placed in a laser and cut using the laser. This would mean that you could draw out the shape you needed using 2D Design.	8	<p>LaserPly - I decided that using Laserply would be suitable as it can simply be cut using the laser cutter allowing for the shape required to be accurate and will allow me to use my CAD skills.</p> 
	MDF	<ul style="list-style-type: none"> • Cheap • Easy to work with. • Comes in large sheets 	Pieces can easily split Would be slightly difficult to cut in the shape required.	Low	MDF is suitable as it's cheap and can be bought in bulk. It can also be painted easily. But this could be difficult to cut in the shape required.	5	
Layers	Pine	<ul style="list-style-type: none"> • Straight grain • Would be easy to work with • Easy to get 	Can be scratched easily Softwood	Med	Pine would be suitable as it light and would be able to hold the fabric.	6	<p>Sapele and Acrylic - I thought that using Sapele for my wooden layer was appropriate as it seemed strong and looks aesthetically pleasing. As for the acrylic by adding this to my light will allow another aesthetically pleasing element to the light.</p> 
	Oak	<ul style="list-style-type: none"> • Very Strong • Looks really nice 	Expensive and heavy.	High	Oak is expensive however it's aesthetically pleasing and has a very nice finish to it. It's also strong meaning that it wouldn't split.	5	
	Sapele	<ul style="list-style-type: none"> • Strong • Simple to work with • Looks nice 	Can bow easily. Difficulty when working with machines.	Med	Sapele would be extremely suitable because it will be able to withstand any pressure and look appealing to the target user.	7	
	Acrylic	<ul style="list-style-type: none"> • Tough • Light weight • Professional finish 	Scratches easily, and can be brittle	Low	Acrylic is suitable for this design as it can be easily cut on the laser cutter to fit the design.	9	

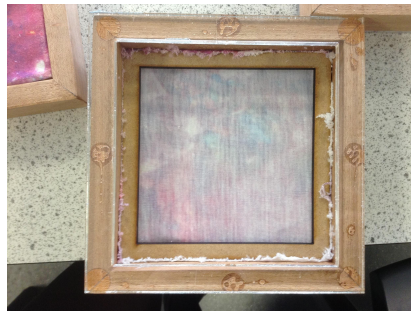
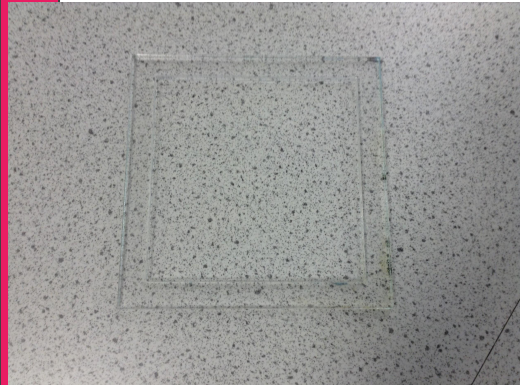
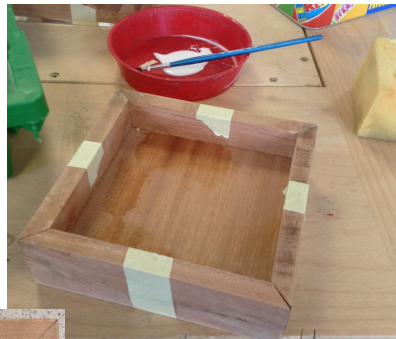
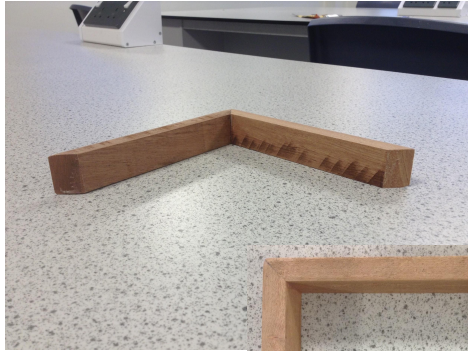
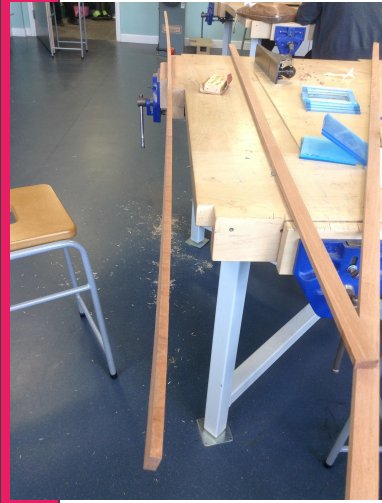
Gantt Chart

Task	Estimated and Actual time	Monday 27th February							Monday 6th March							Monday 13th March							Monday 20th March							Monday 27th March							Comments
Measure, Cut and sand wood for boxes	Est	██████████																																			This was easier as I had already worked out my measurements.
	Act	██████																																			
Measure where external frame will sit	Est								██████																												I was able to do this in the time allocated because I already had a rough idea on what the sizes would be
	Act								████																												
Drill holes where the external frame will be attached	Est								██████																												As I haven't used this machines before I allowed extra time however, I was able to complete this is shorter period of time.
	Act								██████																												
Glue mitre joints together to form boxes	Est								██████																												I found this one of the hardest processes to do as I struggled to get the glue to hold for the first timeround.
	Act								██████																												
Draw and cut acrylic layers	Est								██████																												I was able to do this well because I had measured the size of the acrylic I would need.
	Act								██████																												
Attach acrylic layer to the wooden box layers	Est								██████																												Again I found this task tricky to do as it was hard to keep it fix together when the glue was drying.
	Act								██████																												
Measure and cut frames for fabric inside. made for plywood	Est								██████																												Prior to this task I had already worked out the sizes I would require the frames to be
	Act								██████																												
Measure size of fabric	Est								██████																												This task was simple as I was already aware of the size of fabric I required.
	Act								████																												
Print Richard Weston pattern and transfer on the heat press	Est								██████																												This process was new to me, therefore it took me longer to do as I had to learn what the correct temperature and timing was to allow for the best final outcome.
	Act								██████							████																					

Planning for Making

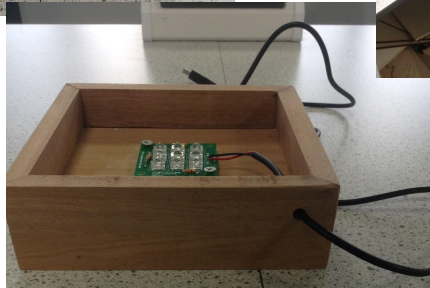
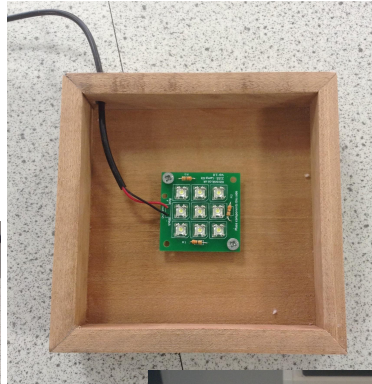
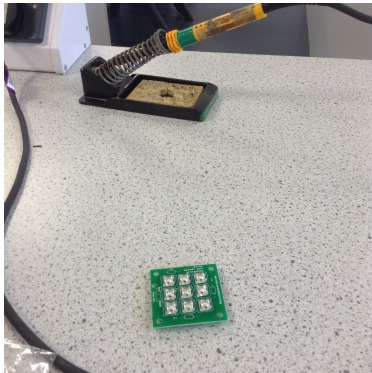
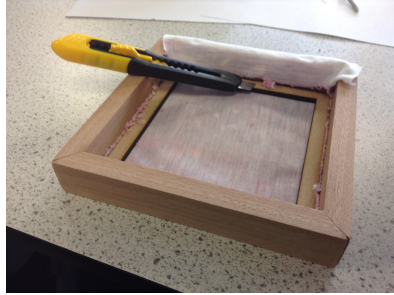


Construction Process



To start of my construction process, I decided to create the wooden layers. I started by sanding down the 2 long lengths of Sapeli before measuring out the first length which was 150mm. Using a 45° angle jig I was able to cut the correct angle require for my mitre joint. After I had cut all my lengths of wood to the correct sizes I sanded down the joints and used a set square to ensure that all the angles were correct. Once all the angles were correct I was able to join them using PVA glue. I chose to use Sapeli as it was strong and looked aesthetically pleasing, and will complement the colours in the pattern nicely. Once they were joined together, they were sanded down to ensure an nice finish. I then went onto create the acrylic layers of the lamp. I created these layers on 2D, I made sure that the line to cut were red, as if they were black they would only be engraved. and had then cut on the laser cutter. Using the laser cutter made the process accurate and quicker compared to doing in by hand. After both layers were created I was able to use Araldite to bond the wooden and acrylic layers together. I did this by placing a small dots of Araldite on different contact points where the acrylic and wooden layers would meet.

Construction Process



The next stage for the construction process was produce the Richard Weston pattern. I decided to use fabric to display the pattern, this was so the light could shine through highlighting the pattern. I transfer the image onto fabric by using the heat press. This was a quick way of transferring the image when the temperature was correct. I then used the laser cutter to produce the frames for the fabric to be attached to, again I used the laser cutter to save time. After I knew that my frames fitted I was able to attach the fabric to the frames and push them into the wooden layers, and trim down to the correct size using a knife. This was the best way of attaching the fabric as if you attached it straight onto the wooden layers it would look clumsy and unfinished.

I then measured and cut my base for Sapeli, this was a simple stage as I already knew the sizes required for the base to sit perfectly. Next, I soldered the 6'6 LED Light Board together. Using the hand drill, I drilled a hole to allow the cable to attach to the USB port. Then I attached the light to the base using screws and attached the base to the bottom layers.

Construction Process

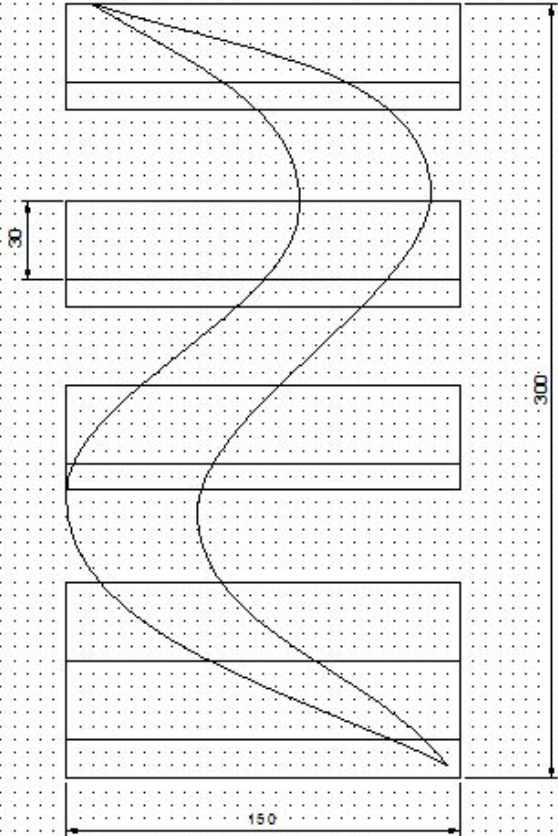


Nearer to the end of the construction process, the last stage was to produce the external frames. To do this I used the laser cutter, I drew the shapes required using 2D design, again making sure that the line to cut were red. I used the laser cutter to ensure that the frames were accurate. I cut the frames for laserply as this was able to be cut on the laser cutter but was also strong enough to hold all the layers. Once these were cut, I marked where they were needed to be attached to the layers. I then was able to use the drill to add these holes. As the next step I decided to stain the external frames as the colour of the laserply didn't look right against the colour of the Sapeli. This was an important stage as it's important to the final overall finish of the lamp.

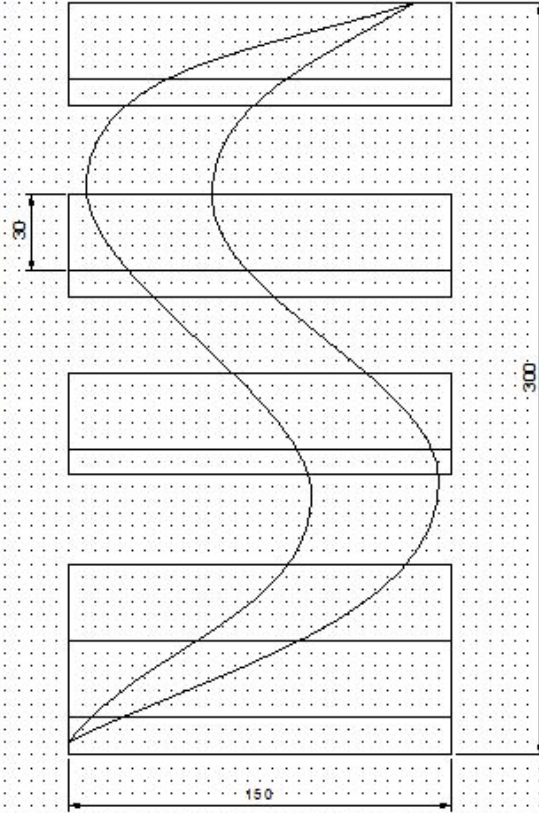
Finally, I attached the external frames to the lamp using the hand drill to create pilot holes for where the frame would be attached, then using a screwdriver I attach the frames to each layer to create the overall finish of the lamp. When required I used a bridle to make the screws fit in better.

Working Drawings

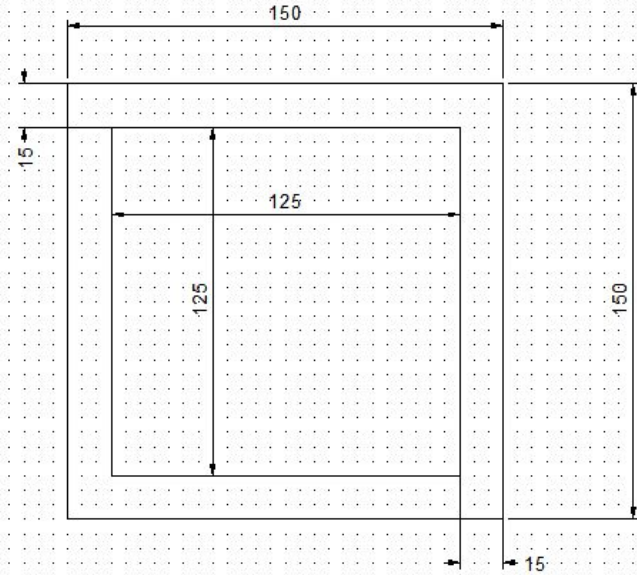
Front View



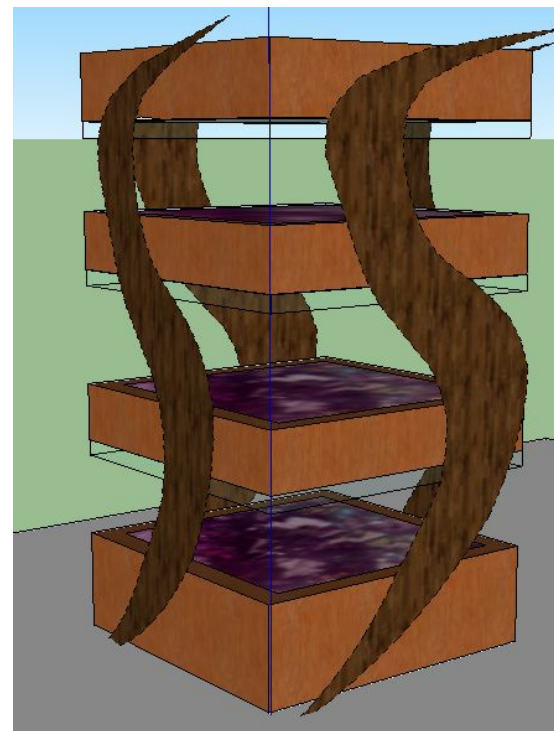
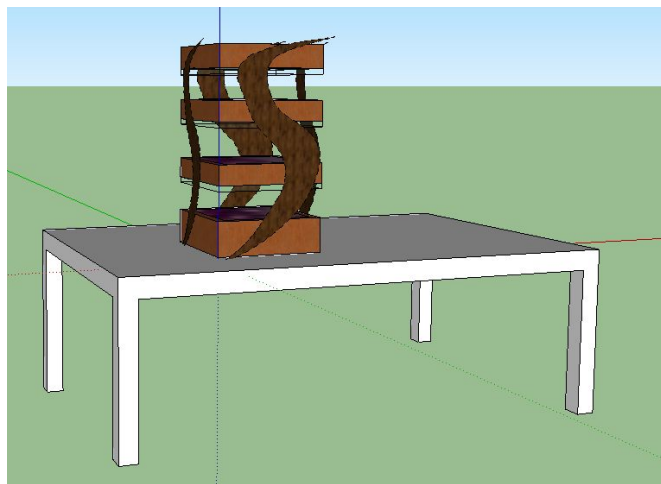
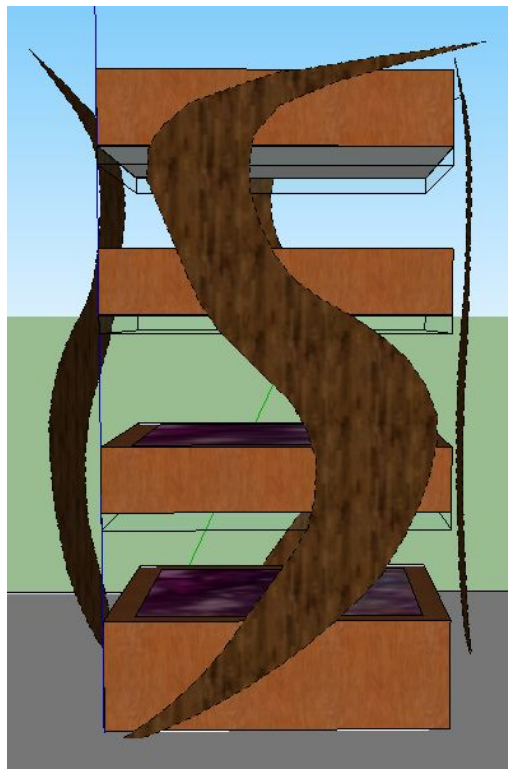
Side View



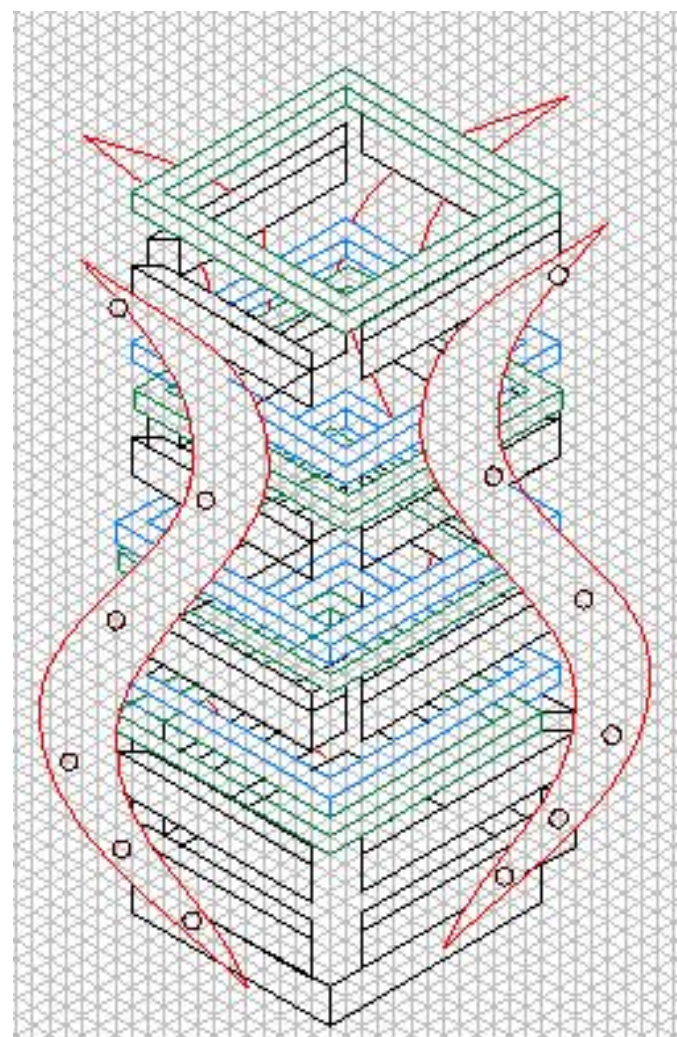
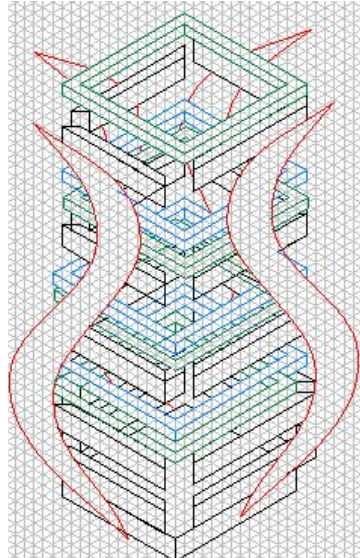
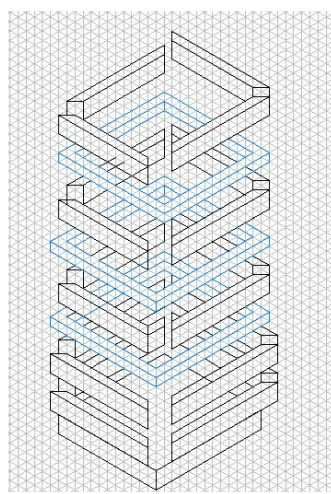
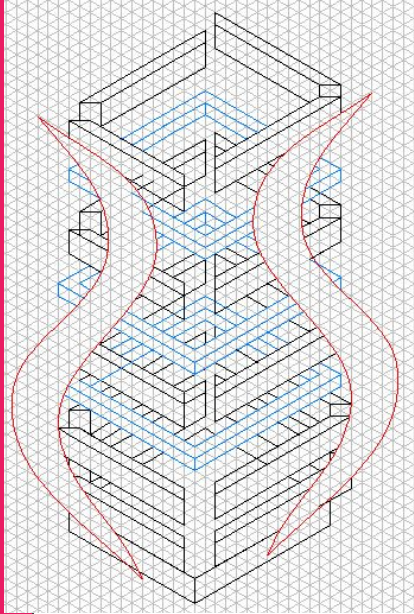
Plan view



CAD Drawings



Exploded View



Green = Fabric frames / fabric

Red = external frames

Black = Wooden Layers

Blue = Acrylic

Evaluation

For this project, the initial brief was to design and make a light inspired by Richard Weston. I have felt that I have successfully met this initial brief and have also met the various points outlined in my specification. I have successfully included an image of Richard Weston's by printing it onto fabric and including it within the overall design therefore meeting the initial brief set. Also, I wanted to ensure that all aspects of the light were completed to a high standard.

Considering all of my specification points, overall I feel that I have successfully met most of these throughout the course of the project. The most important aspect of my specification was the function of the light. It must illuminate enough to allow the user to be satisfied without the main pendant light on. I feel that the light meets this point as during testing, it provided a suitable amount of light that would allow the user to sit comfortably. Secondly, the aesthetics of the light were also an important aspect that was required, as it had to be designed to the taste of the user. I feel that I have successfully met this specification point as it's designed with clean curves and with the modern taste in mind. I tested this during the design stages by referencing other modern designs.

Furthermore, I feel as though I have met the third specification point of the target user, as I feel that it has been suitably designed and manufactured for a young female who's got a passion for graphic design and modern taste. This was tested throughout the design period by presenting the top 5 designs to the target group and asking their opinion to see which was the best suited. The fourth specification point was the location of the light. The light must be suitable for a bedroom/office space; and I believe that this has been achieved as it is a suitable size for a bedside table or small desk.

During the manufacturing I was checking the size regularly to ensure that the light remained appropriate for its location. I feel that I have also successfully completed the specification point for both ergonomics and safety. For example I had to make a light that was suitable for the user, which I have successfully done as it's simple to use. Also, in the specification it stated that all the wire must be secure within the light as this could be a safety hazard. During manufacturing, I ensured that the only wire that could be accessed was that one required for the light to be plugged in, however, there are some edges which are sharp due to the design which is a negative aspect to overall light.

Evaluation

The seventh point on the specification was materials, it was stated that I should use a range of materials during the construction, which I feel I have successfully done as I have used wood, acrylic and fabric. Before construction began, I considered the appeal of the materials, and how this would impact the overall finish of the light.

The eighth point in the specification is quality & finish, requiring the light to be finished to a high standard. I feel I have successfully done this however, in hindsight I could have waxed my wood before assembling the light.

I also ensured there were quality checks throughout the construction process, for example – when laser-cutting, that the correct settings were used for the material to ensure that was damaged during the process. These quality checks were vital as they allowed me to get the best quality finish overall.

Finally, the last specification point was cost. I feel that I haven't been as successful with this element, as I have used more expensive materials and components than initially planned. However, I feel this is justified as I have ensured that the finish quality is higher than if I had used less expensive materials.

Opinion of Others

I took my final light to show a number of individuals including the target user, friends and family. I wanted to get different opinions on the final finish of the light, and what different people thought about aspects such as the aesthetics, size and function.

The first individual I showed my light to was the target user, because the light had been designed and made according to their needs and requirements which were highlighted in the specification points. As I had asked previous questions about what they wanted from the lamp, when I showed them the light, I wanted to get their opinion on whether or not they thought that the light had met the criteria. Firstly, I asked them about the size of the final lamp, as during the design phase the size was a little unclear. However, they thought that the design was suitable for a desk in an apartment, and wouldn't take too much space.

They also thought that the height of the lamp was ideal as it wasn't too tall either. I then asked if they thought the aesthetics were suitable, and was advised that the 's' shaped frames on the outside of the lamp gave it the modern style that they wanted, and that the Richard Weston pattern used really suited the style of the lamp and complimented the overall design.

The target user also liked how a simple design had been developed into something quite unique. I also asked whether they felt that the light was made from the right materials, and the target user confirmed that they worked well together in this design.

After I also decided to show the light to family and friends, as I wanted to get further feedback on its design. Friends said they thought that the design looked really unique as they hadn't seen anything like the 's' shaped frames before. However, they did think that I could have used different screws - maybe flat heads - as the current screw heads are rounded and protrude from the surface. If I was to make this light again I would change these to ensure the aesthetics were perfect.

Furthermore, when I asked my family about the light, they thought that the pattern on the material worked really well within the overall design, but it could have been better fitted to the frame. They said that they would buy this lamp in a store, but the thought that it could use a few changes such as using a light source with an external switch to enable it to turn on and off easily. I would use this feedback to improve upon my design in the future if I was to make this light again.

Manufacture

Throughout the course of the manufacturing, I followed my plan closely as it enabled me to keep track of the tasks I had completed, and the tasks that were outstanding. My planning helped me keep organized at all times, allowing me to meet the deadline. Using the gantt chart allowed me to see what all the tasks were and when they needed to be completed by. I feel that I have successfully used the gantt chart to monitor my progress throughout the project. However, even though I followed my gantt chart the best I could, the order that the tasks were completed in changed slightly.

For example, when I cutting the frames for the fabric to be attached to on the laser cutter, I also cut the external frames as this saved time and enable me to work with one material at a time. On the gantt chart there were rough timings to follow but these changed too as some tasks took longer than I first anticipated. For example, at the beginning of the project when I was having the wood cut this took longer as the wood began to twist/bow once it had been cut meaning that we had to re-cut the wood.

In the manufacturing process, I completed various quality checks to ensure that the final product would be finished to the best standard possible. One of the quality check I did was on the laser cutter, when working with Laser Ply to create the external frames, I checked that the settings were correct for the materials. This was an important check to make as without it the frames could have been ruined and material would have been wasted. Another quality control check I completed was checking the heat press was at the correct temperature for the image to be transferred onto fabric. The quality of the Richard Weston image had to be at the same on each piece of fabric, as this would show consistency in my work. Checking that the quality was good was extremely important because the initial brief required us to use one of his images as the focal point for the design.

Manufacture

Previously I analysed a similar light to the one I have designed. Comparing the two together now, I think they have both finished to a similar standard. Considering the two lights have been made from different materials, they are similar as both have acrylic within their designs. This indicates that is a space for my light on the market, as the other light has been selling well on the same market. I think that my light could also be sold for the same or similar to the light that is already on the market because of the similarities shared between both lights. If my light had to be batch produced, some changes would need to be made in order for the light to be made efficiently. A change that would have to be made would be to simplified each stage of construction in order to make the production time as short as possible. However, the majority of the light could stay the same.

If it was to be batch produced the accuracy of each aspect of the design would need to be identical for each lamp. This would require templates to be made of the different aspects of the light, such as the external 'S' shaped frames. To do this CAD/ CAM softwares could be used to ensure that the process is quick and all measurements are exact. During this process there were several occasions when measurement haven't be accurate meaning that they had to be re-cut and material was wasted. Due to this if the light was to be batch produced the I would suggest that CAD and CAM software should be used to improve these inaccuracy that occurred.

Other Factors

The lamp is aesthetically pleasing and can provide subtle lighting to a desk or room. Lighting is important for creating the correct ambiance therefore the light can positively influence the user's mood and feelings through reducing the need to use the main pendant light which can be bright and over stimulating at times. These other factors that I can use to help me evaluate my final light. The lamp does make people's lives better as they can get pleasure from looking at the light. The lamp was designed to be a decorative feature to the location meaning that it should make people feel happy to look at it. The lamp also allows individuals to sit comfortably without the main pendant light on which also improves the users lives, as they may not want to have the main light on at all times. However, the light may not appeal to all individuals personalities which could mean that some people may not find it aesthetically pleasing.

The lamp does improve it's location because it makes it look more attractive. One of the functions identified in the specification point was for the lamp to be a decorative feature to it's location. This is achieved as the wires are concealed in the lamp's base thus allowing the lamp to be placed on a surface in a tidy manner; unlike many lamps which have trailing wires which contribute to an untidy/disorganised appearance.

If this design was to be developed and manufactured the various components would need to be compiled by individuals and therefore would create job opportunities. It would create some jobs for individuals as there are various components that would be required to have been made. There will be a fair amount of people that could be employed if this was to be manufactured in batch production. The benefit of some components being made using CAD and CAM software is that workshop space required would be minimal. From completing the detailed analysis I would suggest that this style of lamp would be best sold online and only deliver to the UK due to the cost of transport. On the light I analysed this sold well online and was able to save money because they only deliver to the UK.

In terms of the materials used to create the final light, these were economical and sensible as they will last the lifespan of the final light which was around about 10 years. The materials used are sapele wood, acrylic and fabric which enable minimal use and therefore less waste. They are all very sensible because you are able to use minimal material which would mean that material isn't being wasted. The fabric used in the light was from a t-shirt meaning that I reused something from its previous purpose. It could also be made from recycled materials as it is possible to reuse something made from acrylic.



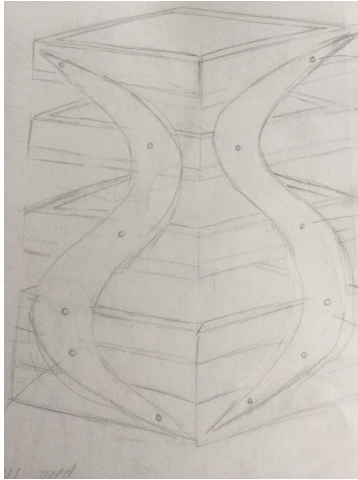
Conclusion

To conclude, I am pleased with the overall outcome of my light. Personally I feel that light is unique as there aren't any other lights on the market that have this style of frame or look similar to the design of this light. I am also pleased with how the heat transfer worked with the Richard Weston image as the initial brief specified that the light must include one of his images. The 's' shaped frames are one of the features I am very pleased with as this was one of the hardest parts of the construction phase, I feel that they have been finished well with the wood stain as this really compliments the colour of the Sapele wood.

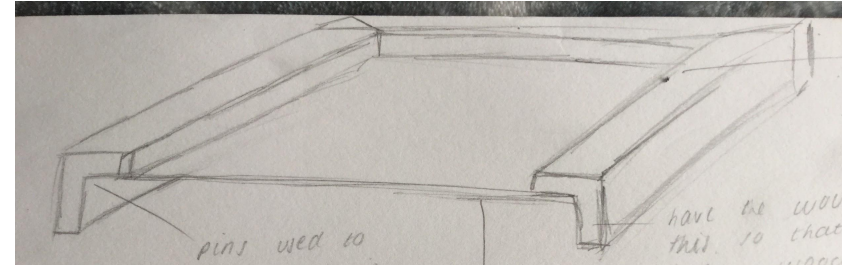
I have learnt a lot throughout the course of this project, to start with I have learnt that during the design phase is vital to the whole process as it allows you to narrow down your overall idea. Also, I have learnt that during the manufacturing stage it is important to follow your plan the best you can as it allows you to keep to the timings you have been allocated. As well as allowing you to be effective with your use of machines and equipment, this allows you to waste less material and less time during the manufacturing stage.

Another thing I learnt throughout the course of the project is how to use the product analysis to benefit your own project. I used my detailed product analysis to look at the average price range for a designer lamp, what materials were popular with the target users and what process works well for the overall finish of the lamp. In future, I will continue to do detailed product analysis on any products I decide to produce. I will take all that I have learnt from this project and all that has worked well during the process into further projects which I lead as a designer and a manufacturer.

Modifications



One of the first modifications I would make if I was going to make this light again would be to use flat head screws rather than round head ones. This was one of the negative comments I received about the aesthetics of my light. Using the screws that are flat will mean that the frames are smooth and don't have the bumps of the screw heads ruining the effect that is wanted.



Another modification I would make to my light would be the way that I attach the fabric to the light. Instead of using separate frames for the fabric, I would have to wood cut so that it could act as a frame itself. This would mean that the fabric could be pinned into the wood and stretched enough to not look clumsy as some people thought the fabric on the frame didn't look right. Also, this modification would allow the cost of the light to decrease as you would no longer require MDF to make the frames from and you would be doubling the purpose of the Sapele wood.

One of the negative comments I received was that they would prefer the light to have an external switch so that they could use the light without have to unplugging it at the mains. To resolves this I would have to modify the lighting source - changing it to use a small bulb. To accommodate such a modification I would have to make the base slightly higher to allow the bulb to be mounts comfortably.

