Design

A Level

What is A Level Design?


- A Level Design encourages a broad approach that allows students to develop a sound grounding in several 3D areas. It is a very flexible, practical course as it is able to accommodate particular areas of interest that students may wish to pursue.


- These areas include, but are not exclusive to:

  Furniture Design, Product Design, Industrial Design, Jewellery, Craft eg. Blacksmith/stained glass/ceramics, Interior Design, Theatre & Prop Design, Architecture, Engineering, Pattern Cutter, Carpentry/Joinery








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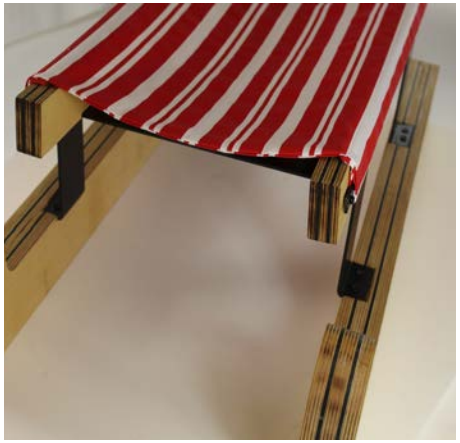
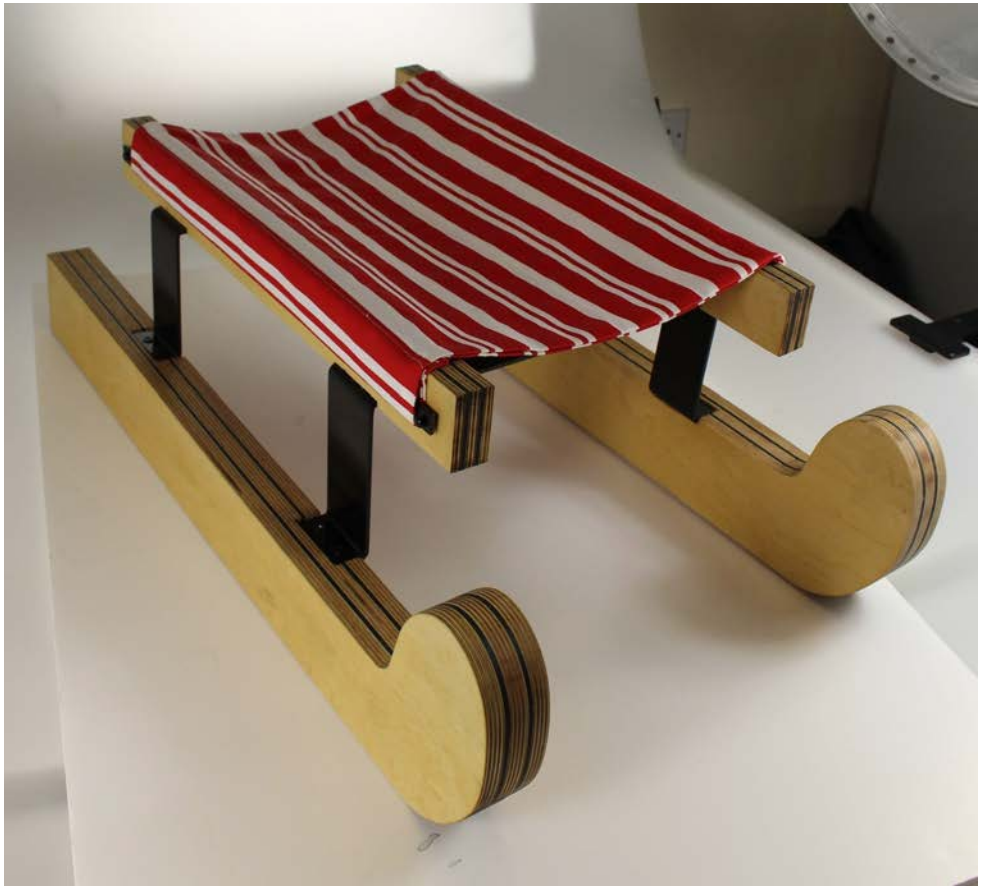
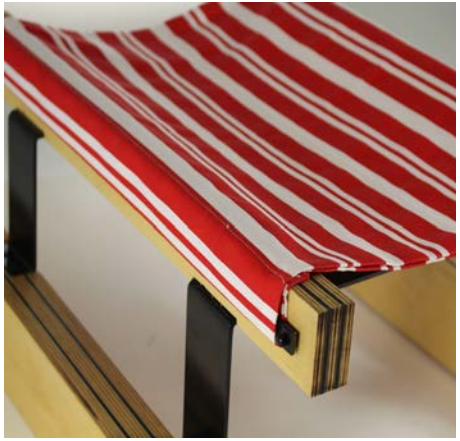
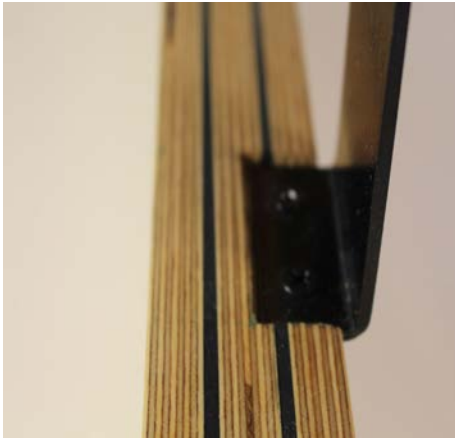
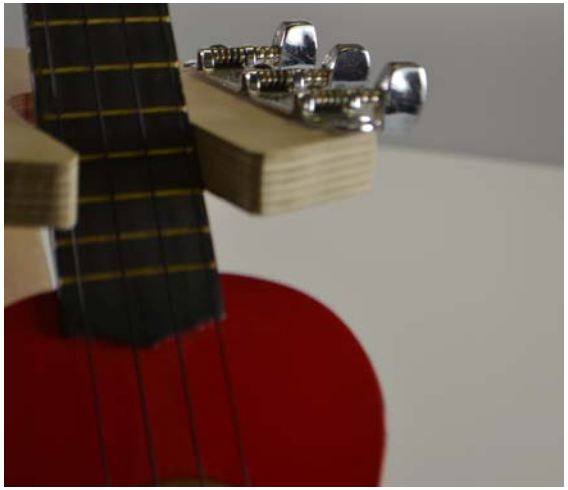
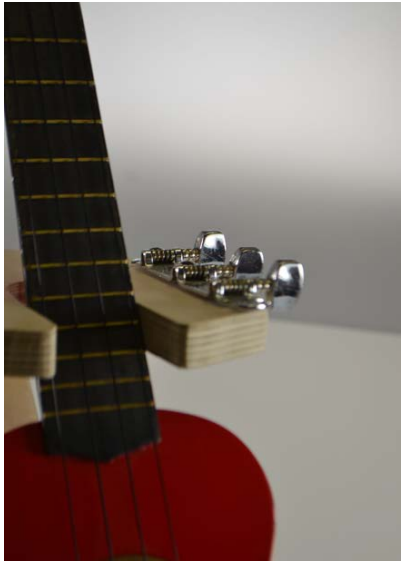
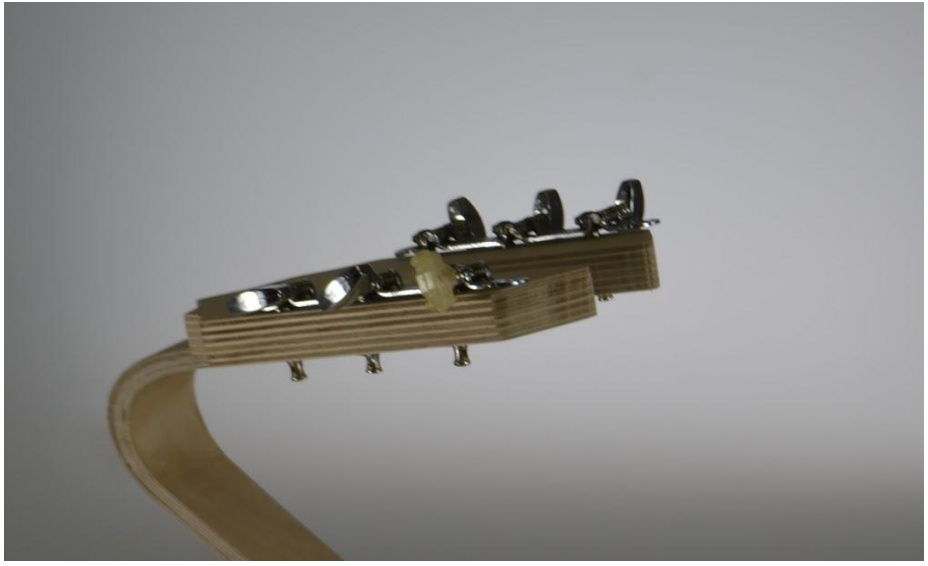
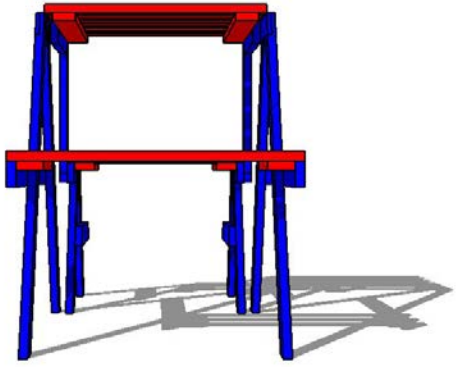


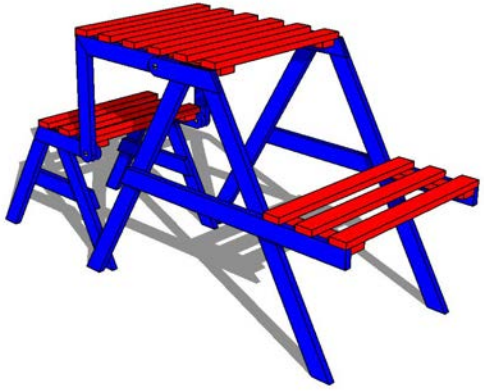




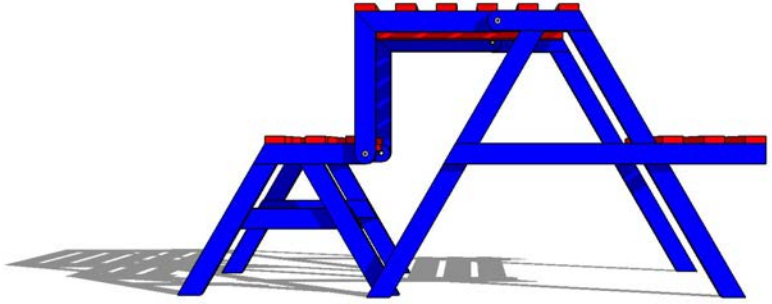


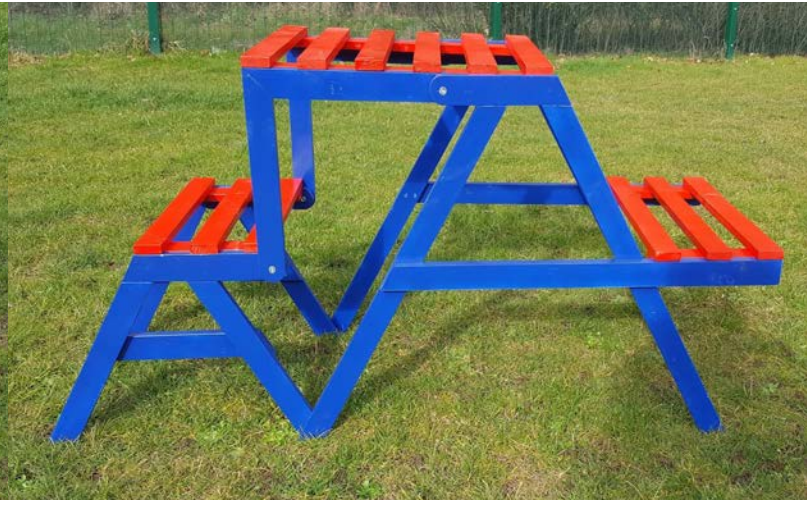


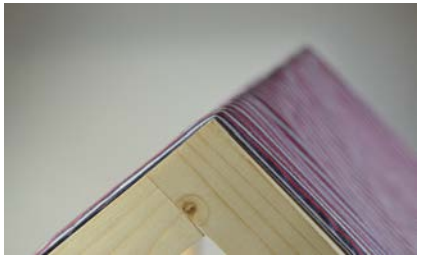


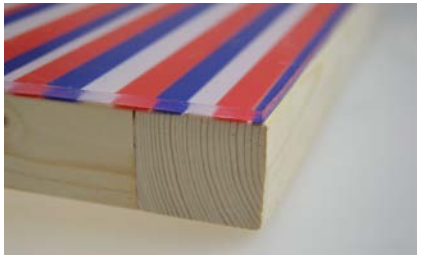










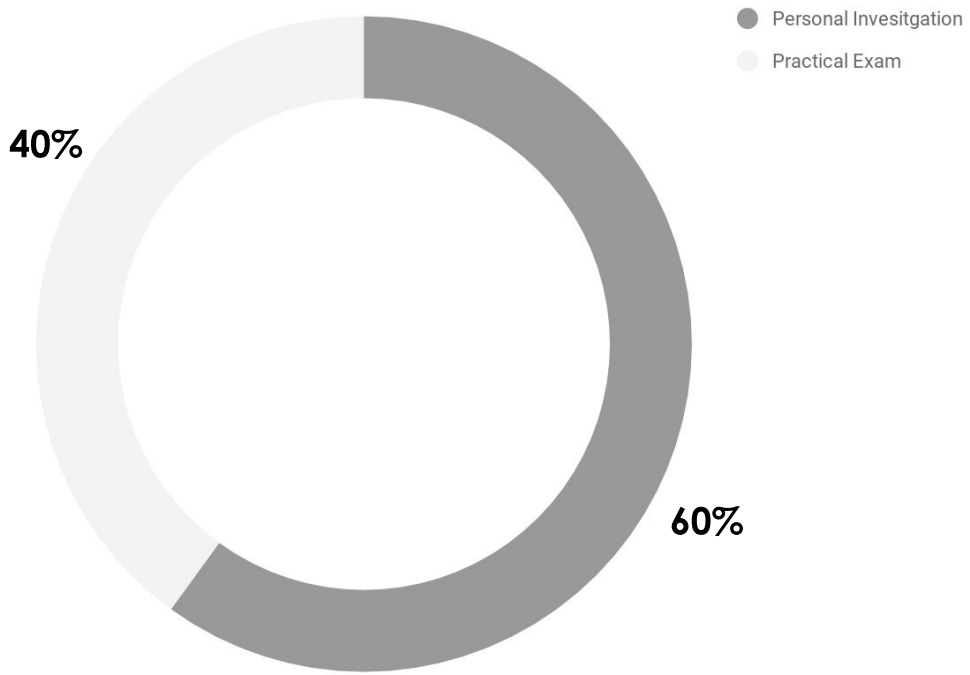

What is the course structure?

Year 1
Mini Units - Skill building through a series of Mini Projects which includes a variety of practical knowledge & design techniques.

Coursework - Beginning the Personal Investigation Project

Year 2
Coursework - Continuing with the Personal Investigation Project

Exam Unit



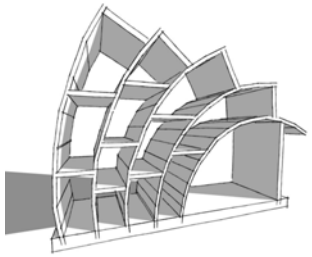
What are the main skills developed?

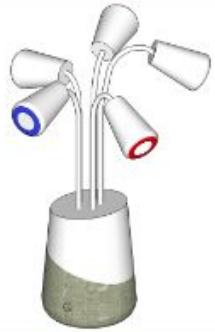
- Practical skills using a range of manufacturing techniques and a variety of materials.
- How effective design solutions influence the lives of users.
- Primary & Secondary research techniques, analysis, discussion and evaluation of design techniques and products.
- Organisation, selection and communication of ideas, solutions and responses are presented using appropriate presentation techniques.
- The development of specialist terminology related directly to design processes.

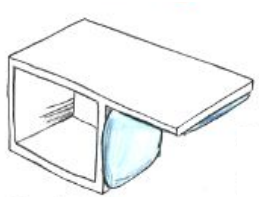
Examples of Previous Projects

- The next slides show examples of previous work produced by students in units of work for **Biomimicry**, **Visual Language** and **Compact Living** Briefs, respectively.

- These briefs allow students experience new skills, processes and materials delivered in a very flexible, accommodating way to focus on an individual's particular areas of interest that students may wish to pursue.







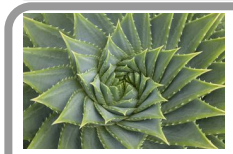
Biomimicry - designing structures, products or materials based on biological forms or processes.

Biomimicry can be through the function of a product like velcro inspired by seed pods, or through the form of a product, for example the shape of the gherkin in London.

In the above photos the spiral shape of a shell (left) has been replicated in stairways to form geometric spiral staircases. The right photo is inside City Hall, in London, where the spiral shape has been abstracted further to form a modern staircase. This is an example of biomimicry for aesthetic purposes.

These photos show how velcro has been inspired by spiky seed heads.. Nature has designed these seeds to stick to animal fur so the seeds can be carried as far as possible to distribute seed. The close up photo (middle) shows how hooks on the end of the spikes latch around fibres in fur. Velcro (right) has been designed to have tiny hooks which latch to fibres in exactly the same way. This is an example of biomimicry for functional purposes.

These are some examples of architecture inspired by natural forms.

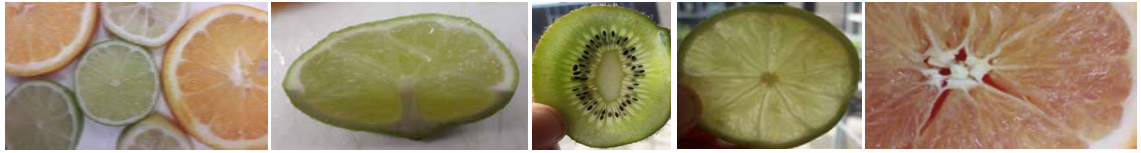


These are some examples of natural forms that I think look really nice and would be interesting to explore.

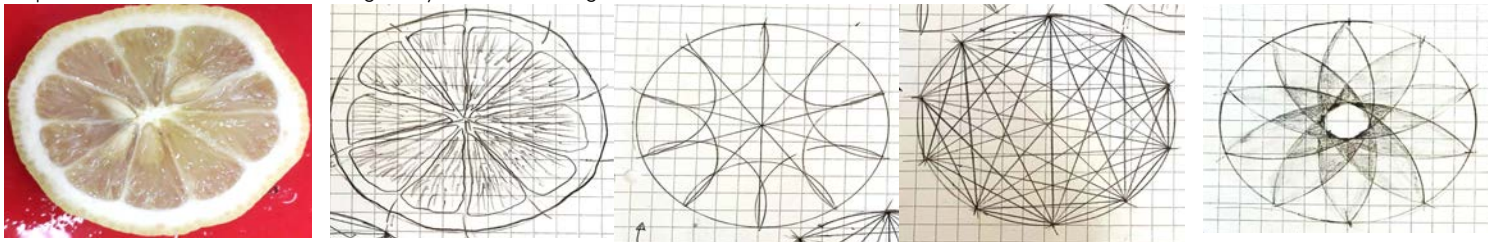
The shape of the bullet train's streamlines nose is inspired by a kingfisher's beak to make sure it has very little air resistance so that the train can be more economical.

For my Biomimicry project, I want to focus on the beautiful patterns seen in nature and how I could incorporate them into a design for aesthetic purposes.

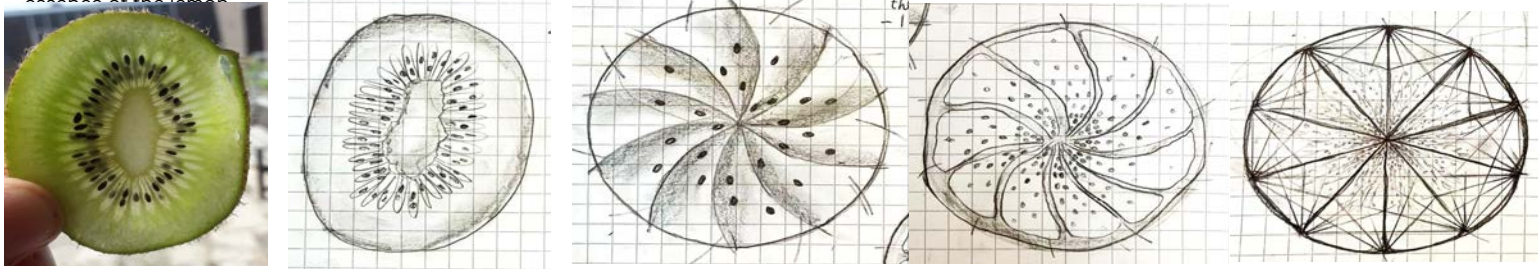
Extracting geometric shapes from fruit

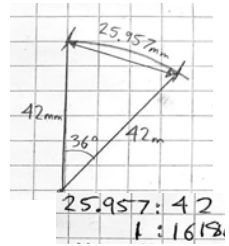
Above is a selection of primary photos that I took of various citrus fruit and kiwis to capture the geometric shapes and structures inside them. I particularly was interested in the segments found in citrus fruit and the slightly misshapen perfection which is inside every fruit. I like how all the citrus fruit have slightly different shapes and curves in them even though they are made of segments.



Above is my initial drawing inspired by the lemon slice photo I took, and then various quick abstractions of it. The second drawing uses the 10 segments seen in the lemon to create various arcs within the circle. I don't find this pattern particularly useful or pretty however. In the third drawing i have connected all 10 points together, symbolic of the stringy tendons in citrus fruit. I like the fourth drawing due to the regular geometric pattern created, but i feel that it loses the essence of the lemon.



Above are my experiments with the kiwi photo I took. I like the random distribution of the seeds in the kiwi. In the second drawing I have added random seeds in to a design but I feel that they look too evenly spaced. In the third drawing I concentrated the seeds in the centre which I think creates a nicer patten, similar to how the kiwi's seeds are mainly at the centre. In the final drawing I have combined many of my ideas and inspirations together to form a complex geometric pattern.



When drawing the 10 segment designs I discovered the ratio of the radius of the circle is approximately 1.618 times larger than each segment edge. This number happens to be exactly ϕ, the golden ratio - a number seen frequently in nature and geometry. I would like to research the significance of this number further in my design ideas.

My favourite ideas to take away from this page of research are using segments (maybe 10 or I could try other numbers) to create arcs and patterns within a circle.

I also want to find out about other examples of the golden ratio in nature and use the patterns it creates to help my designs.

≈1.6180339887498948

The Golden Ratio

Inspired by finding the golden ratio in a 10 segment shape, I wanted to investigate where else this number was found in nature and what exactly it was.

The golden ratio is a mathematical constant which is seen in nature because it is one of the most irrational numbers, meaning it is hard to accurately approximate it. The exact number goes on forever, but is about 1.618 and it can be approximated as the ratio of two consecutive numbers from the fibonacci sequence. (1,1,2,3,5,8,13,21,34,55,89...)

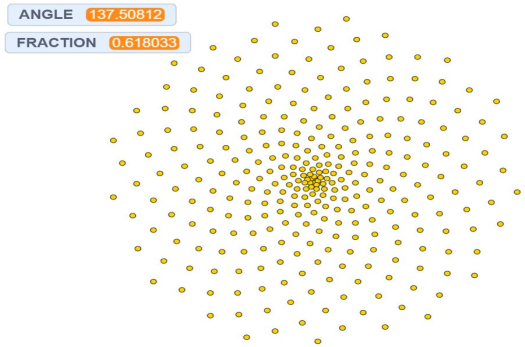
Because the golden ratio is so irrational it is useful for positioning leaves in nature so that no two leaves are in the same place. The leaves in the plant on the right are positioned by turning the golden ratio each time to make sure that no two leaves ever overlap, resulting in this spiral shape. These spiral formations are evolutionarily beneficial for the plant meaning each leaf can get more light, but also form beautiful spiral patterns which are aesthetically pleasing. This is why I want to investigate the patterns that the ratio can form for my design ideas.

$\frac{1+\sqrt{5}}{2}$

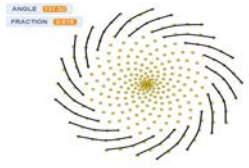
When researching the golden ratio, I found that the same pattern found in leaves is also found in the seed patterns in sunflower heads and in pine cones. This is because the plant can pack the most seeds in by positioning them in this way. The number of clockwise spirals is always a fibonacci number and the number of anticlockwise spirals is always the next fibonacci number, making the ratio between them approximately the golden ratio.

For example, in this pine cone there are 13 clockwise spirals and 8 anti clockwise spirals.

I wanted to create my own golden ratio seed patterns to inspire my designs, but rather than drawing them out by hand I used a simple computer program to generate the patterns for me. Each dot is the golden ratio of a turn around from the last one (at an angle of 137.5°) which produces this really nice double spiral pattern.



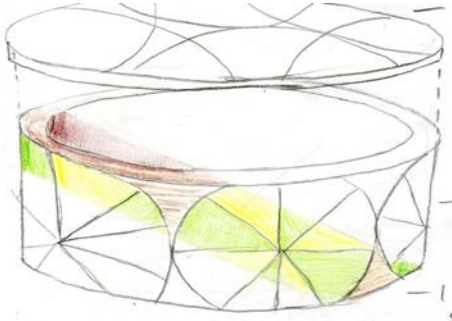
Counting up the clockwise and anticlockwise lines I got 21 and 34, two fibonacci numbers.



I think that these patterns look very hypnotic and I would like to use them to inspire my designs for my storage device.

Initial Design Ideas

Inspired by the golden ratio in nature and citrus fruit.

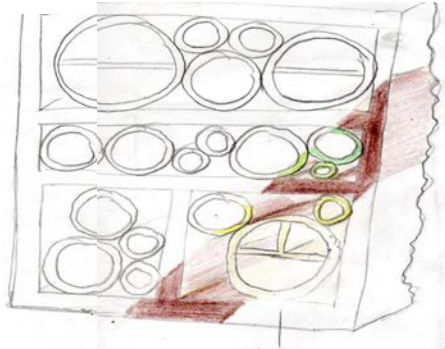


— lines from points around edge

— round shape inspired by citrus fruit.

— patterns on side inspired by citrus

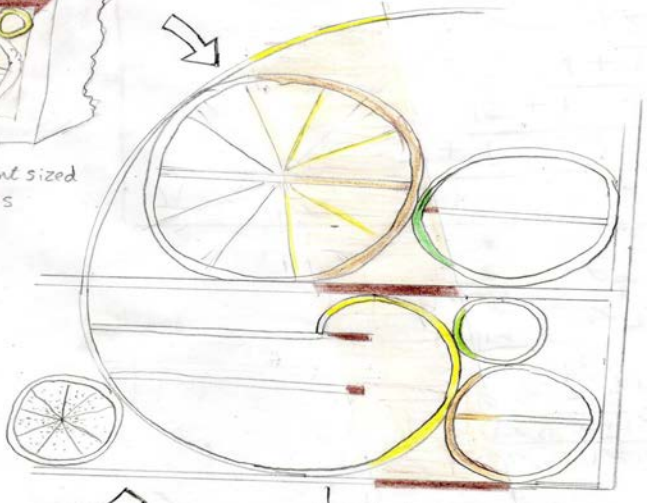
— I feel that the box shape idea is a bit boring



different sized circles

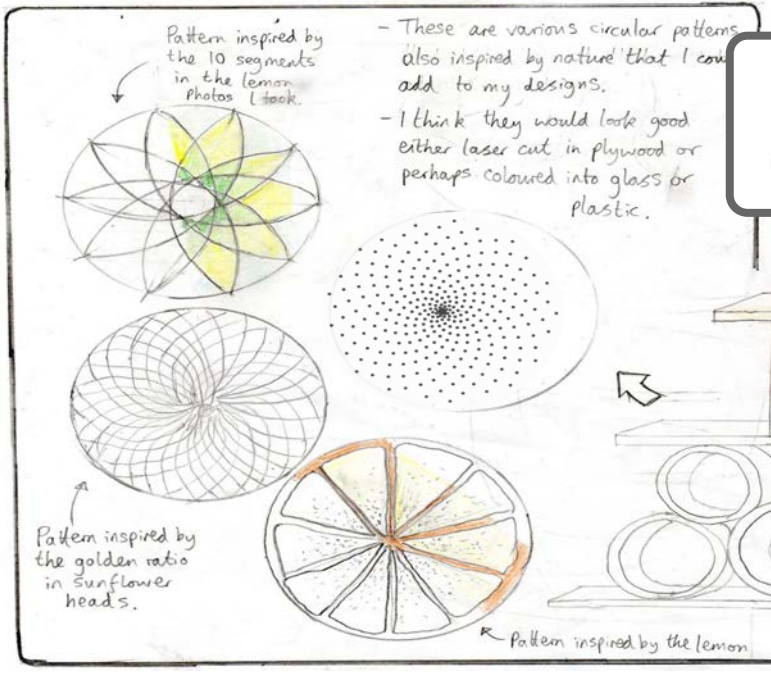
— Instead of a box, this is shelving unit filled with circles inspired by the different sized citrus fruit

— the shape is too 'square' and regimented



spiral shape inspired by the golden ratio

- not as square and box shaped
- items sit on flat surfaces and in the circles
- probably most suited to decorative ornaments
- perhaps the shelves could be in the ratio of the golden ratio

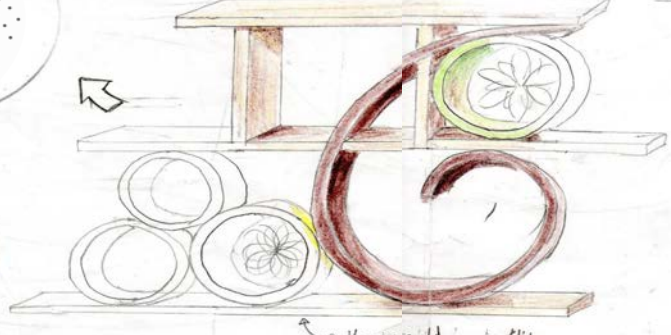


Pattern inspired by the 10 segments in the lemon. Photos I took.

- These are various circular patterns also inspired by nature that I could add to my designs.
- I think they would look good either laser cut in plywood or perhaps coloured into glass or plastic.

Pattern inspired by the golden ratio in sunflower heads.

Pattern inspired by the lemon



patterns could go in the back of the segments?

- this would highlight the items in front of them.

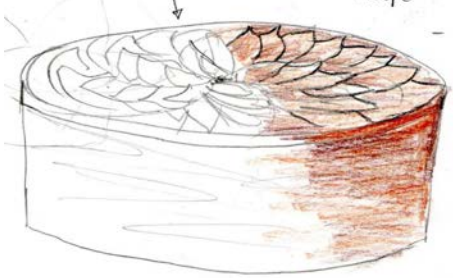
My favourite concept so far is the idea of an upright shelving unit, maybe with spirals or curves in it inspired by the golden ratio in nature. I need to explore different versions and compositions to refine my idea into a good product.

More Design Ideas

Mainly inspired by the golden ratio in nature and geometric patterns found in nature.

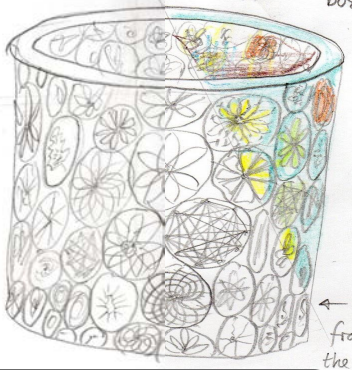
Spiral pattern either laser cut or cut into the lid

- Again, I started with a simple circular box shape



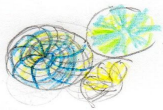
- I used this start point to come up with some more designs.

Items are stored inside this cylindrical box.



← geometric patterns from circles inspired by the fruit and the golden ratio.

- Circles could be laser cut wooden pieces glued together



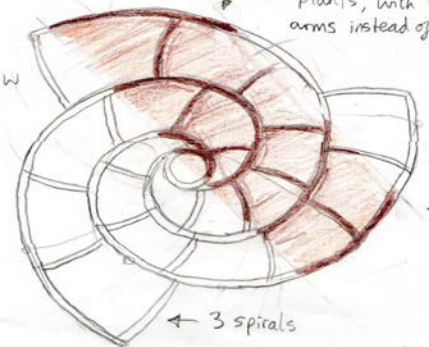
- This is an idea using plastic or glass patterns to give a transfucen effect. The box could have lights ins

- TOP VIEW

5 spirals

spiral inspired by the golden ratio in plants, with 3 arms instead of 5.

TOP VIEW

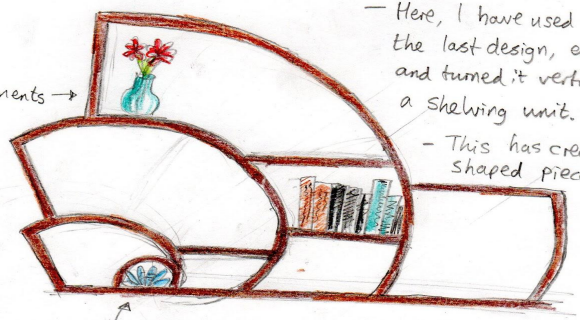


← 3 spirals

3D VIEW

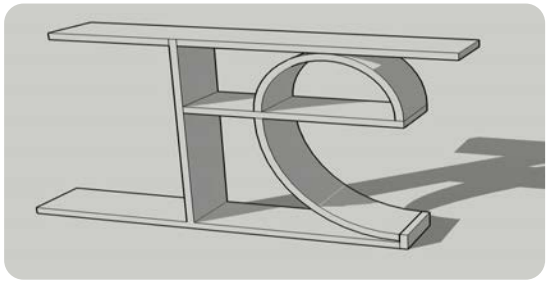
- This design is like a tray for storing small items
- Each compartment is maybe too small to be very practical?

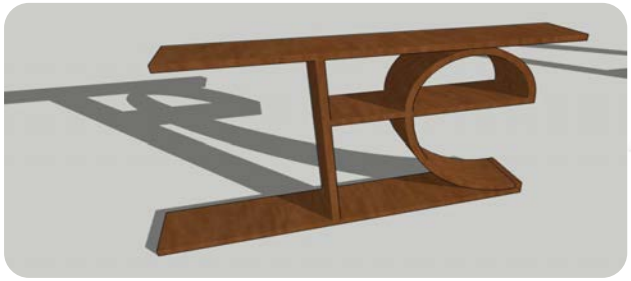
ornaments →

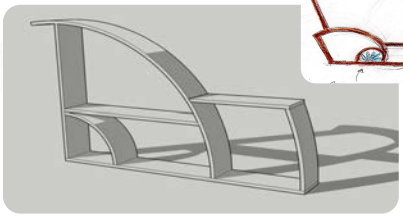


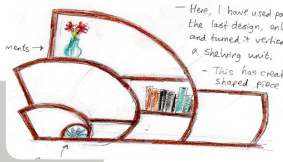
- Here, I have used part of the last design, enlarged it and turned it vertically as a shelving unit.
- This has created an inte shaped piece

Some pieces could have glass or plastic backs inspired by natural geometric shapes as on the last page.







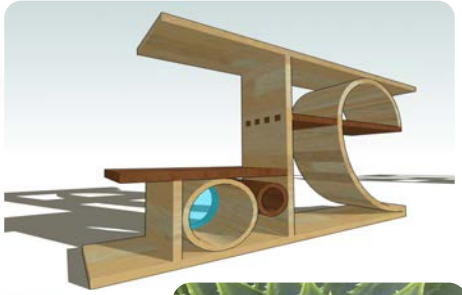


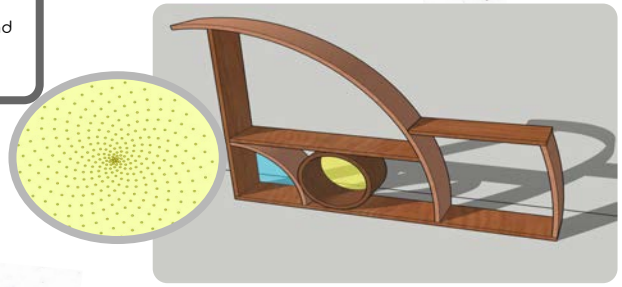
I started by using simple shapes to create this spiral-inspired shelving unit as my favourite ideas so far have been upright storage units.

This is an alternative design shelving unit inspired by the curves in plants and sunflower heads.

Developing design ideas

On this slide I have used google sketchup to refine my favourite ideas and come up with tangible products.

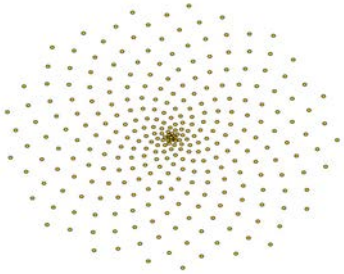


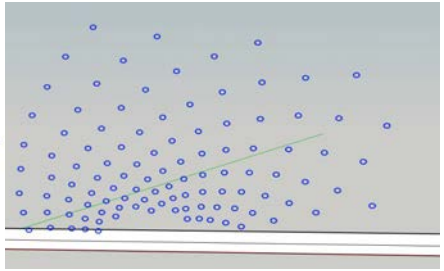


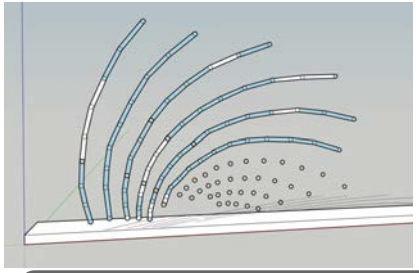
The coloured glass pieces in this design could be patterned with fibonacci spirals as well to mirror the larger design.

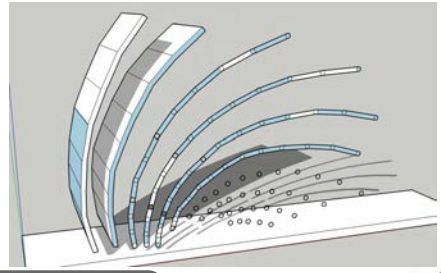
The pieces could be joined decoratively with finger joints, which would also provide the unit with strength.

To get the exact spirals required to truly replicate the beautiful patterns in sunflower heads I would need to trace over a sunflower head pattern rather than trying to construct the shape myself in sketchup. Next, I am going to import the golden ratio pattern into sketchup and use it to create a design.



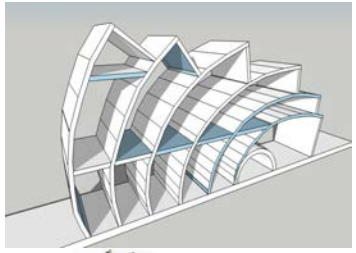


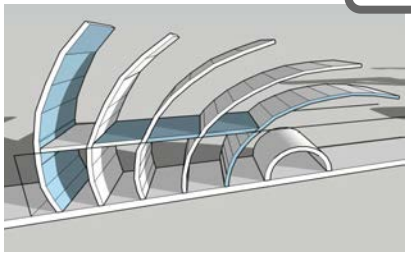


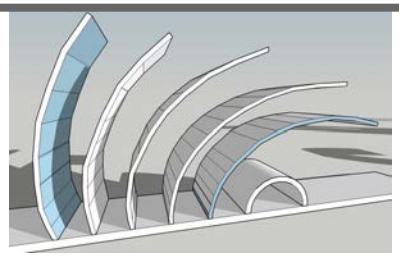


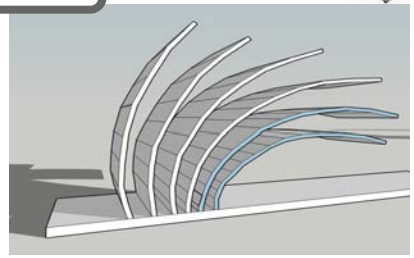
To get the proper shape of the spiral rather than using parts of circles, I imported the pattern taken from sunflower heads into sketchup.

More idea development

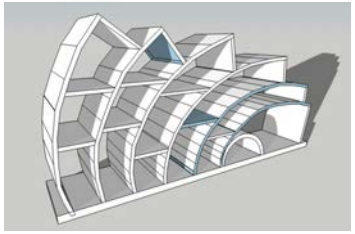


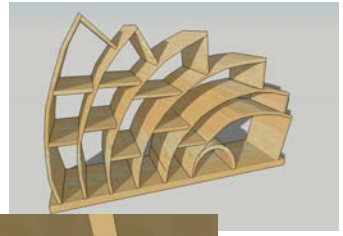






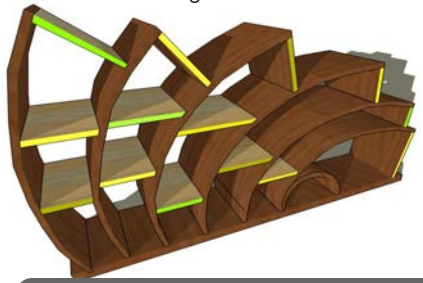
Above is the process showing how I have taken the exact spiral pattern inspired by the golden ratio in sunflower heads and used it in my design. In the above steps I have used this pattern to form a spiral shaped 3 dimensional shelving unit.





On the right is a close up of the housing joint which could be used to attach the curved upright pieces into the base.

I am still unsure how I would make the curves on this design. It could be made of flexi ply bent in a mould. Alternatively the curved pieces could be bent sheet metal, however this might make the design look too industrial. Another problem may be how I will fix the shelves into the upright pieces so they are strong enough to support ornaments or other items placed on the shelves.

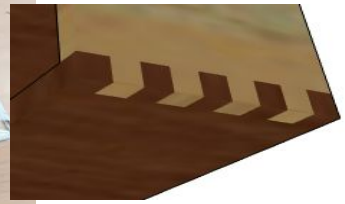


Overall, I feel that this design is very successful and is almost a finished product. I really like the curves and how they are reminiscent of the sunflower head patterns which inspired me.

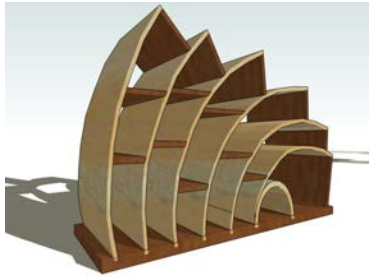
Card Modelling

I decided to make a card model to figure out a suitable scale for my product and to check that it would be strong enough to be self supporting.

Whilst making the model I decided that, for the shelves to be large enough to be useful, there should only be 4 or 5 curved upright pieces to simplify the design.



This corner seemed to carry most of the weight of the product, so it needed reinforcing with braces. When made out of wood, it could have a finger joint on that corner to make sure it stays at 90 degrees as I have modelled above on sketchup. Or it could have another housing joint.



Materials and size

The base length I used for my model was 600 mm. I think this was a good sized shelving unit that would be both usable, but not too big to fit in the home.

The base of the product needs to be quite thick to allow for the housing joints to be cut into it and also to give it a heavy enough base to keep it stable. I think that the curved sections should be made of plywood bent around a former, glued, and then left to dry to keep their shape.

The upright pieces on my model were 100 mm apart at the base and the distance between them gradually increased as they go to the top.

The shelves need to be quite thin, but strong so that they can be supported by the upright pieces. Ideally they would be housed into the plywood pieces but this would be very technically difficult due to the curves and it wouldn't look as good.

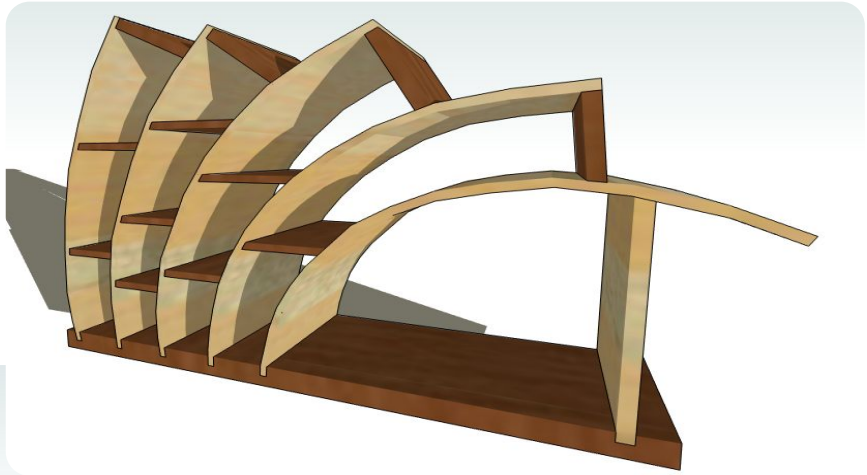
Base wood type

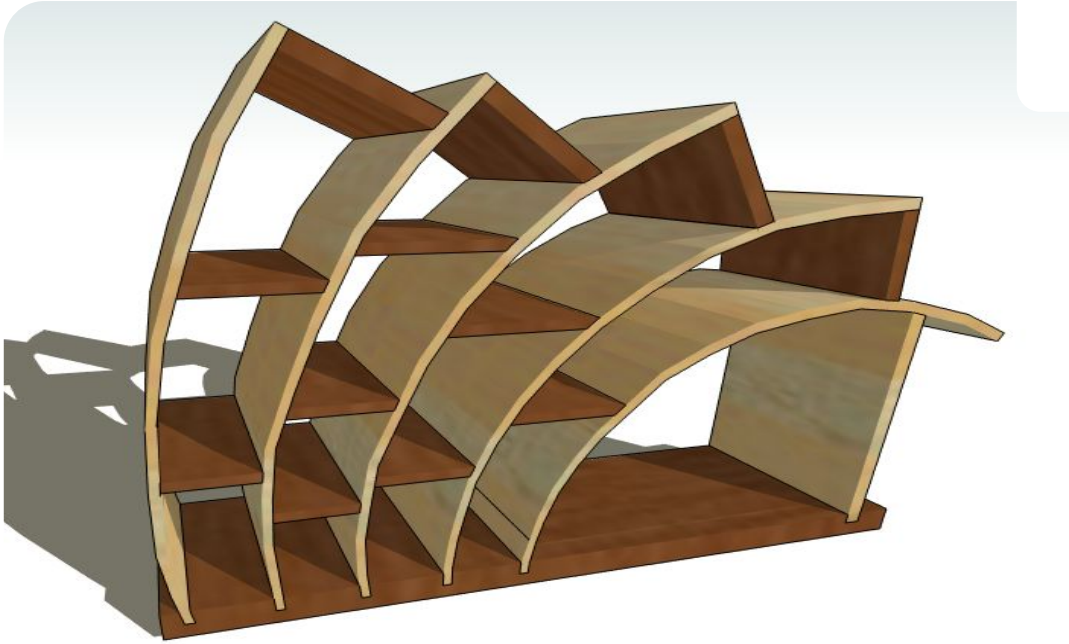
For the base, I think a dark wood would look good as it would contrast with the light plywood spirals. I could use a dark hardwood such as mahogany (left), however this will be expensive and is not environmentally friendly as mahogany is not often sustainably sourced.
I could use pine but it would be too light and might not look very good with the plywood.
Alternatively, I could use more plywood which would match the curved pieces. Also it would be easier to put the housing joints into for the upright pieces.

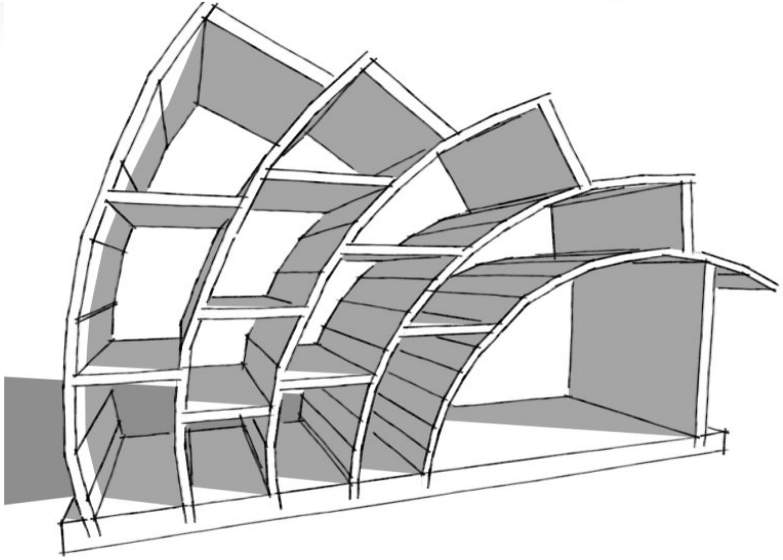
Final Design Proposal

These are representations of my final design on sketchup. I am going to use 3 layers of 3mm flexible plywood to make the vertical curved sections. The curved pieces of laminated plywood will be glued into housing joints in the base.

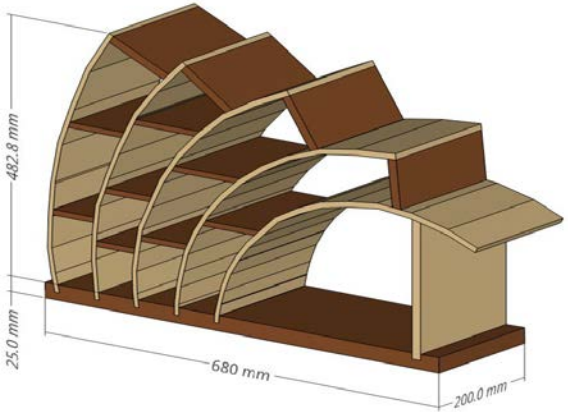
I have simplified my initial idea after modelling to only having 5 curved sections and no complete semicircle curve as the radius would be too tight to bend easily.



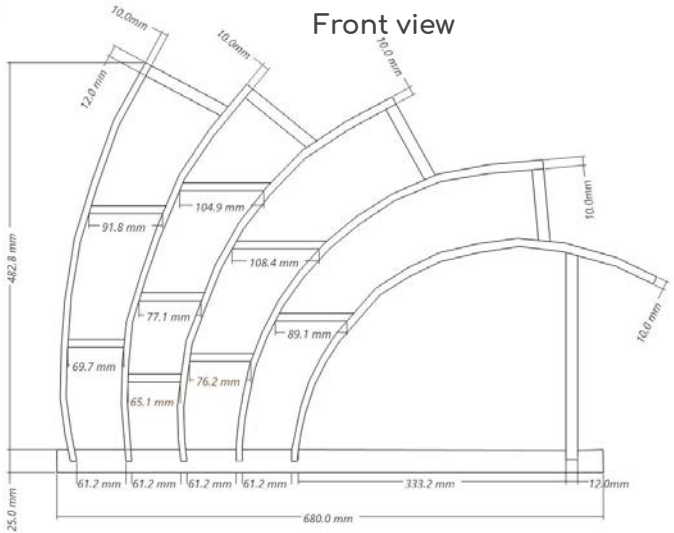




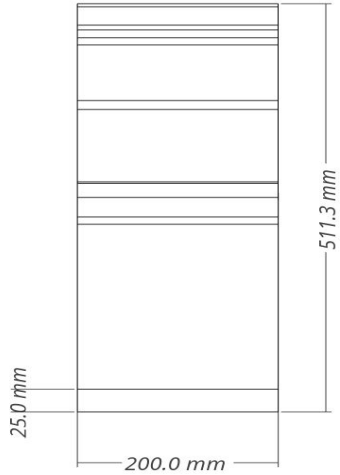
Technical Drawings

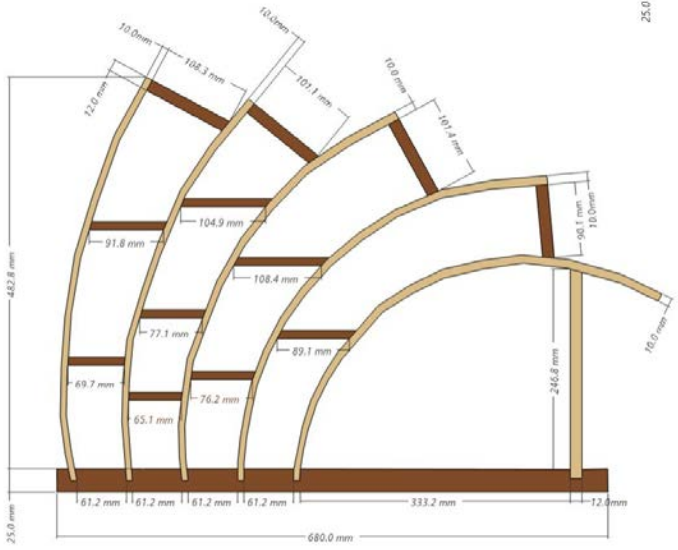


Front view



Side view





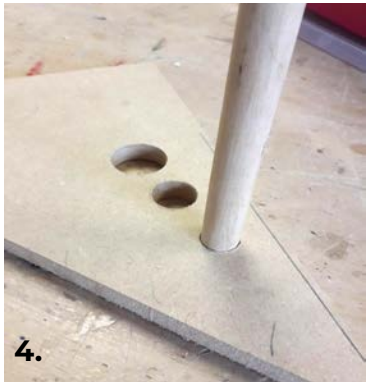
Above is an isometric drawing and orthographic projection of my design, showing the front and side view. I have put approximate dimensions into the drawings so that I can draw a scale drawing ready for me to make the former for bending the plywood. They will not be the exact dimensions of the product due to the organic nature of the bending process and materials available, but they will act as a guide.

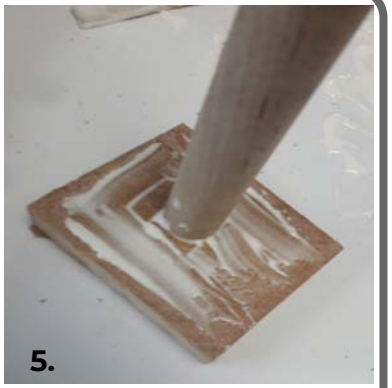
Making the former to bend the wood


1.


2.

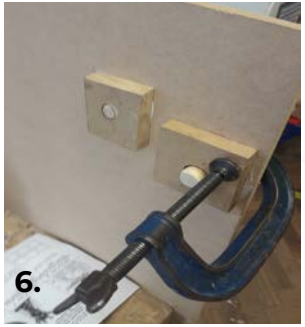

3.


4.

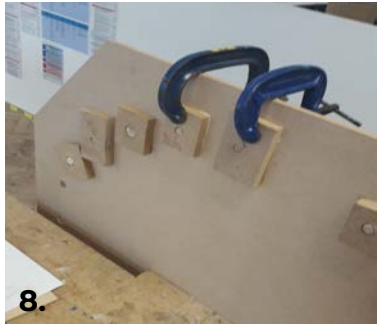

5.

I firstly drew out my design, full scale, to get an idea for the exact curves I needed. Then I tried to make a universal curve which I could use to form all the curved pieces around, by glueing dowels in the shape of the curve. This curve is tighter at the top and shallower at the bottom so that all 5 different radii curves can be bent around it.

To securely attach the dowels I drilled holes in MDF to tightly fit them in. Above is a test piece to check for a tight fit. Also shown is a block that will attach to the back of the main piece of MDF to give a deeper hole to glue the dowel into.


6.


7.


8.


9.


10.

Here I have clamped the extra blocks to the main piece of MDF and have glued in the dowels with PVA. I checked with a try square to make sure they were all upright.

On the right is the final former once the glue had set.

Bending the plywood

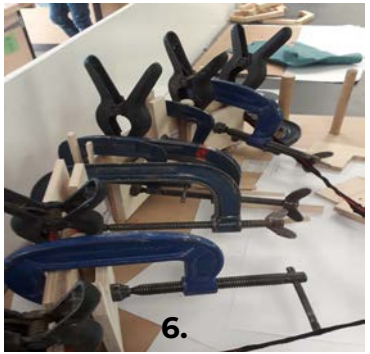

1.


2.


3.


4.

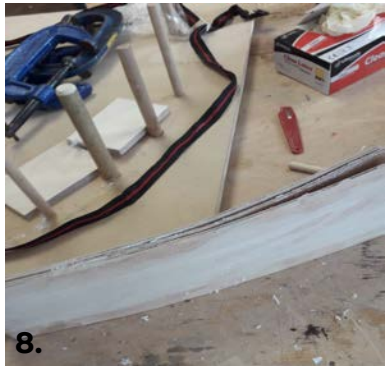

5.


6.

The wood I am using to bend around the former is 3mm flexi plywood. I marked out the pieces to be cut so that for each curve there would be 3 layers of plywood: the outside two with grain along the piece and the middle one with grain against the piece for extra strength.

To be able to bend the plywood more easily, it needed heating so I put the pieces in boiling water to soak it and make it easier to bend. The 3 layers were then glued together and clamped securely around the correct part of the former. After 24 hours, they could be removed from the former.


7.


8.


9.


10.

Unfortunately the water from soaking the wood made the glue too wet so it didn't set fully and the piece cracked open. So the next pieces were glued without soaking them first which still worked with lots of clamp pressure, and it worked much better.

Finishing the plywood curves


1.


2.


3.

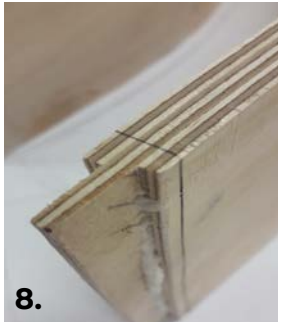

4.

As the picture on the left shows, the edges were very uneven after glueing, so I used a plane to smooth down the edges and create a nice even finish. This is especially important as all the edges will be on show. It also makes sure that all the pieces are a constant width.


5.


6.


7.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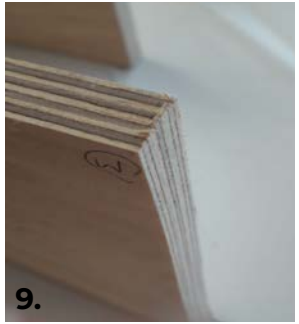

9.

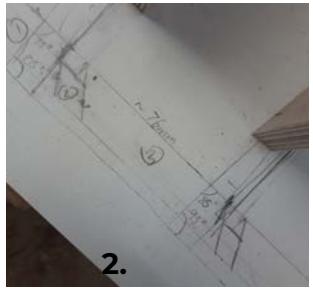

10.

These pictures show the final finish on the edges. There were also some small gaps which I filled with PVA glue and sawdust from the plywood to hide them.

I also marked the ends of the pieces to be cut on the bandsaw with the right angle for glueing into the base.
The picture on the right shows most of the curves in position over my scale drawing, ready to be assembled.

Assembling the product

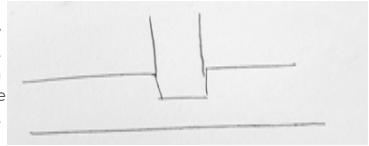

1.


2.

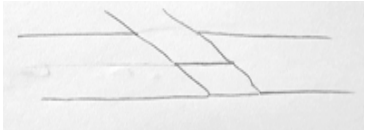

3.

These pictures show how I worked out the angles to cut the ends of the plywood at from my scale drawing.

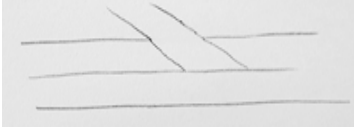
These are some different ways to make the housing joints in the base.
This method involves routing a channel in solid wood to make a normal housing joint. This joint has to be at 90° whereas I want the pieces to come out at an angle.



This is an alternative method using two pieces of wood and a small filler block all cut at angles. However this method relies a lot on gluing with a small surface area, so it will not be very strong.



This is probably the best way to do it, where the base piece is made up of two laminated layers. Only the top one is cut to house the plywood and the bottom piece is solid along the whole length. This is good because the plywood can be housed at an angle and be quite strong at the same time.

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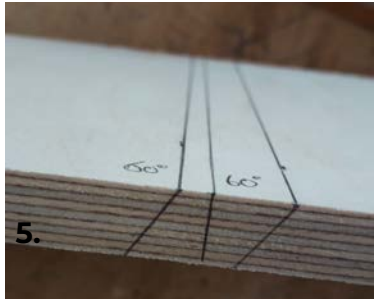
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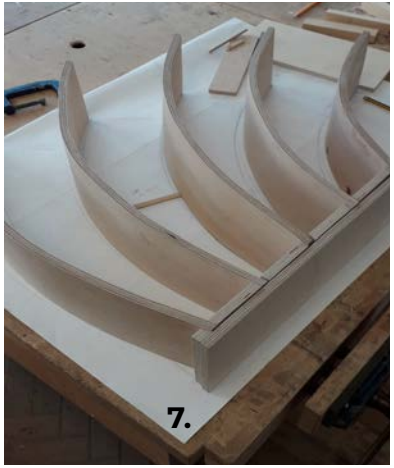

7.


8.


9.

To make the base I used one solid length of 9mm plywood and another one cut at the correct angles and laminated on top create angled housing joints. I cut this piece up into sections and used the disc sander with an angled base to sand the angles into the pieces as shown above.

I also cut a vertical piece to go at the end to support the whole thing.

Glueing and finishing


1.


2.

I firstly used PVA glue and lots of clamps to glue the base pieces together to create housing joints for the upright pieces.


3.

When the base was dry, I then cut the plywood pieces for the top with angled ends to fit tightly. I glued it all together with more PVA and clamps to hold it tight.


4.


5.


6.


7.

Then I cut the shelves and used the disc sander to create the angles so they fitted in between the upright pieces. I used PVA glue to attach them in place. Using a wet cloth and sand paper I cleaned up excess glue and sanded all surfaces to give a smooth finish.


8.

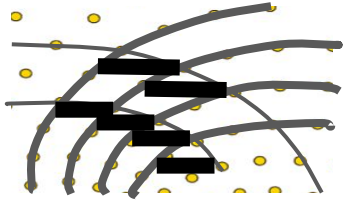

9.

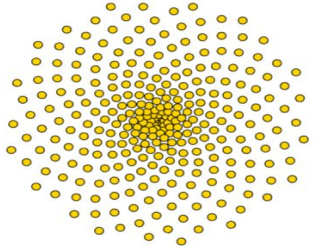
Finally, after sanding, I varnished the product to give it a better appearance that would also be more practical to clean rather than bare wood.

Final Photos and Evaluation

I am very pleased with the final product, because I think it looks beautiful and I like the repeating pattern of the curves. The final design is very similar to the curves seen in the sydney opera house which suggests that perhaps the sydney opera house was also designed from the similar principles of golden ratio curves.
I think if I wanted the product to be even more relatable to a sunflower head, I could have arranged the shelves in such a way that they line up with the spirals that go the other way on the sunflower like I have demonstrated on the right.
The problem with this is that is very hard to accurately position the shelves due to the organic nature of the curves meaning the dimensions are not accurate. If I made it again using more accurate tools and jigs then I could position the shelves accurately in this pattern.
The photo on the left shows how the product is also functional as well as decorative; all the shelves can be used to display different sized ornaments.

Overall, I think the final shelving unit is very successful. I like that some of the curves are a bit wobbly and not perfect as it reflects the unevenness of nature which inspired it. But I like how, despite the organic appearance, the curves follow the rigid spiral pattern that is determined by the golden ratio in nature.



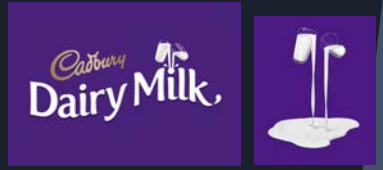


Strong branding

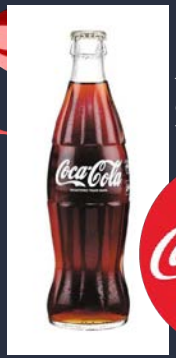
Google's new family of logos are instantly recognisable due to the distinctive colour palette and simple designs. They have been simplified from the old typeface to make them more modern and friendly looking.

Google has started to diversify into hardware now and has developed products such as the phone Google pixel and the assistant Google home.

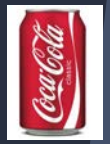
Brands such as dairy milk by Cadbury have very distinctive colours associated with them that help them to be recognised.



Another brand the has powerful colour association is coca cola with a deep red that is instantly recognisable.



The original shape of the coca cola glass bottle is a trademarked shape.



Morgan motor company is a traditional British car company that has manufactured cars in a very similar way since their first 4 wheeled car in 1936. Even their modern cars still have the same original shape.

The shape of the Morgan car grill is so iconic, only Morgan can use it in their car designs:
"Morgan's is believed to be the only car shape accepted ... as qualifying for legal protection under European Union trademark law."

-Automotive news

Google’s brand is very powerful; it consists of four bold, yet slightly muted colours, normally against a plain white background. It is also playful and fun, with original graphics regularly seen on their homepage. Also their hardware products have interesting geometric shapes and sometimes dashes of colour in unconventional places such as the button on the google pixel phone being orange.
The font used is very simple and geometric, perhaps to reflect how they want to make the internet’s information easily accessible and simple to access.

Google Maps

“Our mission—to organize the world’s information and make it universally accessible and useful”

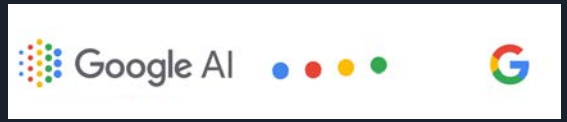
- Google design website

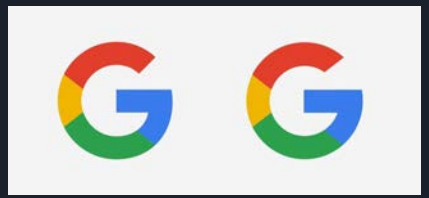
These are are Google’s aims in redesigning their branding:

“A scalable mark that could convey the feeling of the full logotype in constrained spaces.
“The incorporation of dynamic, intelligent motion that responded to users at all stages of an interaction.
“A systematic approach to branding in our products to provide consistency in people’s daily encounters with Google.
“A refinement of what makes us Googley, combining the best of the brand our users know and love with thoughtful consideration for how their needs are changing.”

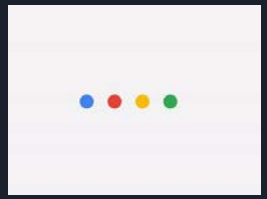
-Google design website

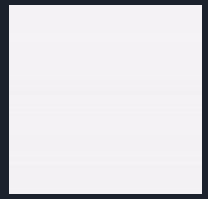
Google’s logo has been carefully thought through to make it look pleasing the eye. The one on the left is the actual logo (a slightly squashed circle), whereas the one on the right is a true circle, but doesn’t look as nice.





The google dots move as if they have a life of their own and have different motions for different meanings.

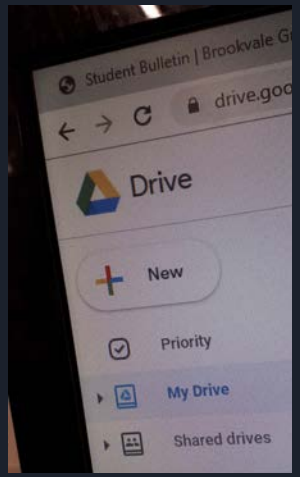


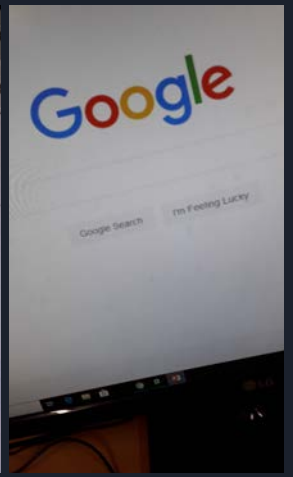


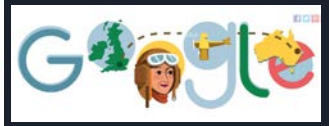
Primary photos

I took photos and screenshots of google products as primary research into the brand. A key feature of google apps is the clean, white background, with the simple logo made from the four main colours of google's main logo. This makes the apps seem modern and appealing to all audiences, as well as being simple and uncluttered.

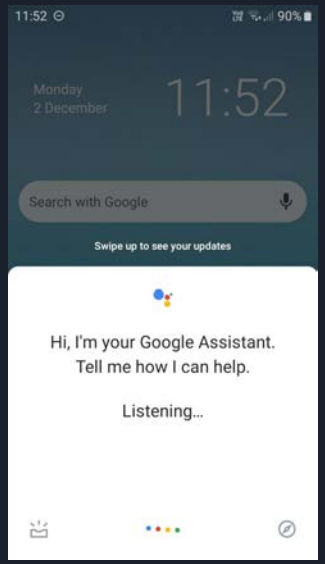
When designing my product, I will need to keep in mind the simplistic principles as well as the playful mood seen in many of google's graphics and logos.

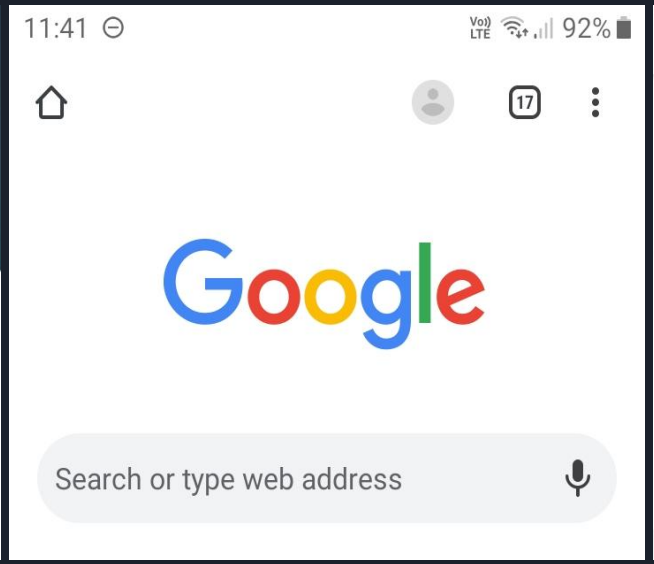


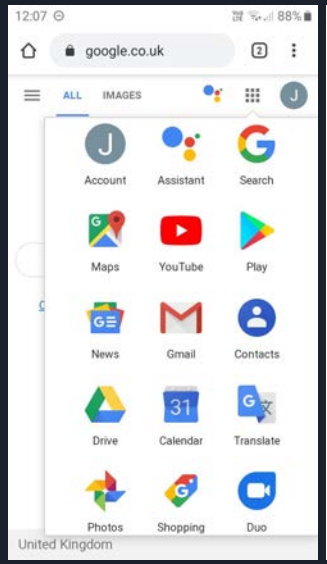


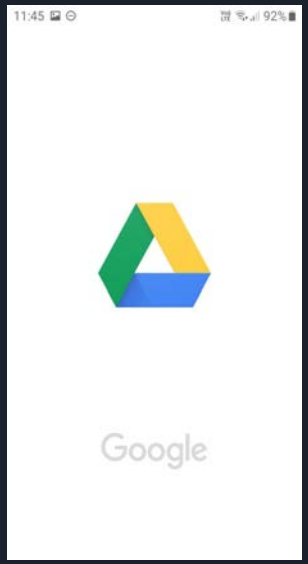


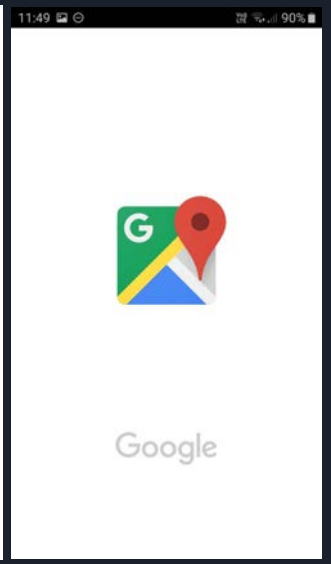
On google's homepage, they regularly have a google doodle instead of their logo to commemorate a person or fun event. These logos often incorporate the word 'google' in a fun way, linking to Google's playful and fun branding principles.



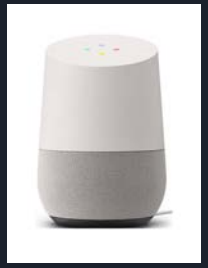








Product Analysis



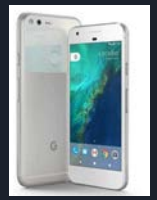
Google Home and Mini

The products on the left are the Google Home and Google mini, which are smart speakers by Google that use the Google assistant app. They have been designed to make accessing the internet even easier and more intuitive.

The colours used in both the Google home and the Google mini are white and grey, which is both modern and simplistic and fits with google's online theme of simplicity. The four coloured dots from the google assistant app appear on the top of both devices, with lights in them to show whether the device is listening or processing etc. This gives the product a sense of personality and suggests it is alive. The small pops of colour also make the product seem sophisticated and refined rather than being too bright.

The google mini is covered in a very light grey fabric which makes the mood seem homely and warm, as opposed to being harsh and industrial. Other Google hardware products such as the Google pixel cover have this fabric quality to them which makes them stand out amongst most other gadgets and tech products. It makes them feel tactile and approachable. Another key design aspect of the Google home is the curved shape, with no straight lines at all. Again this stops the device seeming harsh and makes it seem homely. I really like the shape of the google home; the slanted top gives it a playful feel, like most of google's products, and stops it from looking like other cylindrical speakers on the market.

Overall, the feel of Google's smart home speakers is very playful and modern, but without seeming futuristic or industrial. Looking at them they are not obviously speakers, but small devices that are not obtrusive in a home.



Google Logo and home screen

An iconic google product is its main online homepage, logo and search bar. The google homepage is very simple and approachable, which is probably why it is one of the most used and trusted search engines. There is only a simple white background, the search bar and the google logo, making it uncluttered and calming. The brand has become so iconic that the word Google is commonly used to mean search because of how widely trusted and used the search engine is.

The logo itself is bright and colourful, giving it a playful mood and making the company seem friendly. This is furthered by Google's new simplified font where all letters are very clear and open. The form of the lettering was designed to be clear to read on all sizes of device and create a modern feel.

The composition of Google's logo and homepage is also well thought through. The eye is drawn to the large G, and follows around the outside curve and back onto the logo again.

In the logo, the colours red and blue are used in two letters as they are stronger colours; green and yellow are less dominant and only used for one letter each, but they are still important colours for google.

Overall, google's online branding and presence has been carefully designed to be clear, friendly and recognisable. Despite having many logo redesigns to be more modern, the same 4 colours, the simplistic homepage and search bar have remained as a key brand point. The page doesn't feel serious or intimidating, and the user is made to feel like google is always there to help.

Google Pixel Phone

On the left are various pictures of Google Pixel, a google phone designed to make use of all google apps and products in a coherent and easy to use way.

Apps such as google assistant are integrated into the phone so that they can be used easily and simply. Newer models of the phone allow you to squeeze the sides of the phone or simply lift it up and talk to it to activate google assistant. The main aims of the phone are to make accessing google search and other services intuitive and even easier than before.

The official phone cover is covered in fabric, similar to the google home. This again makes the phone seem less harsh and more tactile to touch. It also is a recognisable feature of google's hardware brand.

The phone can come in four main colours: chalk white, blue, black and orange. These colours are more muted than google's bright coloured logo, probably because nobody would buy a bright green phone, but they are still more playful than other brands' colours. You can even get the white and black models with coloured side buttons, which link to google's bursts of bright colours in their logo and make the product seem more fun.

Potential household products

Lighting

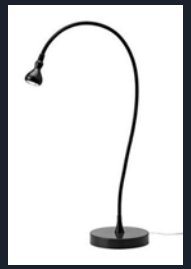
I have chosen to focus on lighting for my product, because it is a product that Google wouldn't normally make. Also, they can be quirky and playful as well as functional, which fits well with Google's general branding principles, both online and in their hardware. On this page I have found some interesting ideas for lighting that could help inspire my designs.









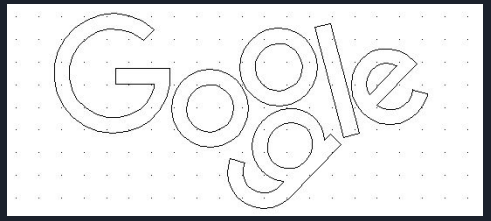


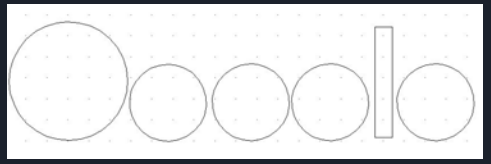


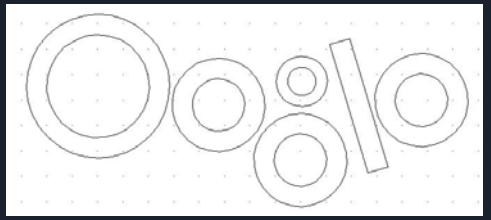




Transcriptions





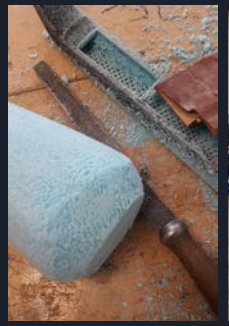


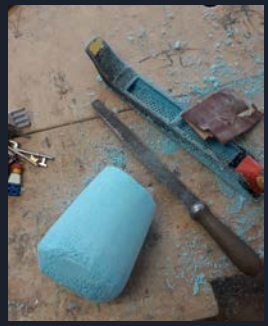
I decided to recreate the google logo from acrylic, as I may use acrylic in my product to portray the bright playful colours of google.

I imported the google logo into 2D design and used it as a guide to recreate the logo. I used simple geometric arcs, circles and and lines to match the simple shapes of the letters. This makes sure that the logo is the cleanest and clearest it can be and fits with google's branding principles of simplicity.

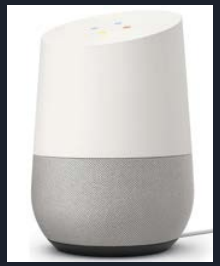
I then experimented with it by rearranging and abstracting the logo into even simpler shapes. I like the last pattern, where most of the letters have been represented with circles.

Using a laser cutter, I cut out the different letters from 3mm acrylic and glued them onto a white background.
I really like the idea of using simple bold coloured geometric shapes in my designs, like the patterns seen in google's logo.





To experiment with the quirky shape of the google home speaker, I decided to make a blue foam model of the shape. I felt that it would be useful to fully understand the shape of the product so that I can be inspired by it's shapes in my design ideas. I started by cutting the vertical slants in both planes and then rounded it off with a file. The top was cut at a slant on the band saw and I also rounded the bottom to the right shape.



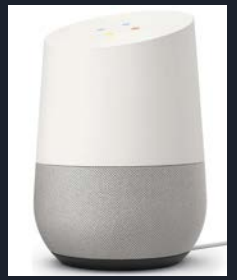
I think that the idea of having a cut off cone, but having the top cut off at a slant like the google home speaker gives a very interesting shape. The top of the piece becomes an ellipse rather than being a circle and adds to the interest and quirkiness. It is these kind of features that I want to include in my designs to make them fun and playful like the google brand.

Compare and contrast

The original Google logo is a very well considered logo that has gone through many iterations to produce the simple, modern logo today. The simple geometric font and little features such as the tilted 'e' make it approachable and playful. The colour scheme is also very important - the four colours used are bold, but have been muted slightly in the logo rather than being pure colours. Also this logo is almost always seen on a white background, which makes it stand out - this is why I also decided to put my transcription on a white background, and why I think my product should be mainly coloured white or a light grey. In my transcription, I kept the font the same as the original by using simple geometric shapes to form the letters accurately. However, the colours I used were limited by the acrylic available. As a result, the blue I used is too dark, so is not as recognisable as the actual colour. The dark blue actually gives the logo a more old fashioned feel and the logo loses some of its modern simple feel.

The Google logo creates a very happy and pure mood. There is no extra clutter or confusion caused by fine details, making it easy to view and understand. This simplicity suggests how Google tries to be portrayed as a 'good' company who wants to be open, transparent and just help its users. The primary colours used in the logo give it a jolly feel, and make the viewer feel happy when they see it. My transcription also shares this simple feel and I like the way how the acrylic reflects the light and creates variation in the colours seen when you look at it. However my recreation lacks the same happy feel that the original has, because the blue is a bit too dark and not as calm looking.

In my transcription, I also abstracted the logo into even simpler geometric shapes as a start point for some of my designs. I simplified all the letters based on circles, leaving me with various sized 'o's. I then experimented rearranging these in an interesting way, for example having the 'l' at an angle. Although this version isn't a substitute for the original logo, I feel that it captures th 'Googliness' of the original logo and is recognisable to the brand. I might use these different sized coloured circles in my designs to add the distinctive splashes of colour seen on google websites.



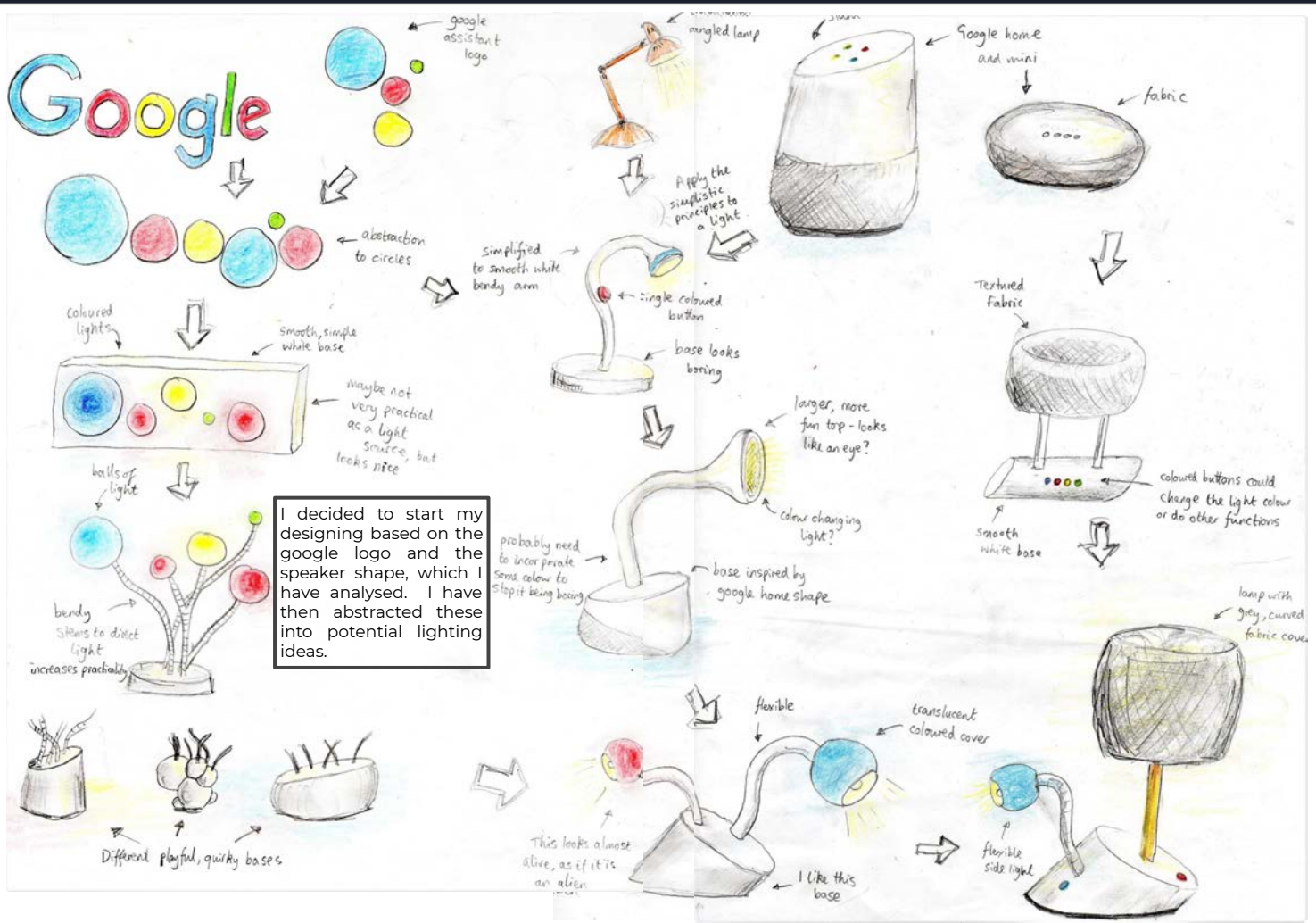
The original Google Home speaker is a smart speaker that uses Google assistant to perform tasks in your home. I focused on the form of this speaker in my transcription; specifically the unusual and original shape and how this gives it a personality and makes it fit in with someone's home. I will probably be inspired by this shape when I design ideas for my lamp too as it is very distinctive and reflects google's playful branding principles. The original piece also has a very stylish and modern feel, due to the muted colour palette of white and grey only, with just 4 splashes of colour in the form of LEDs on the top of the device. My recreation of the piece in blue foam couldn't capture the colour scheme, but I did try to capture the interesting shape of the speaker.

The form of the speaker is generally simple - it is cut-off-cone shape, but the top is cut at an angle, giving it a totally different feel to competitors' speakers who have a flat top. It gives it more personality and interest than simply just having a mainly cylindrical shape. Also, the slanted top is slightly reminiscent of the tilted 'e' in the original logo which reminds you that Google is overall a 'fun' brand. When creating my transcription, I have also recreated this form to create the same quirky feel. I think that the angle of the slant in my version is too shallow, because from some angles it is harder to instantly feel the same character achieved in the original, which has a slightly steeper slant. The line between the plastic top and the grill on the original speaker is horizontal, not angled; if I could have included this line on my transcription I might have changed it to be also at an angle to add to the interest of the product.

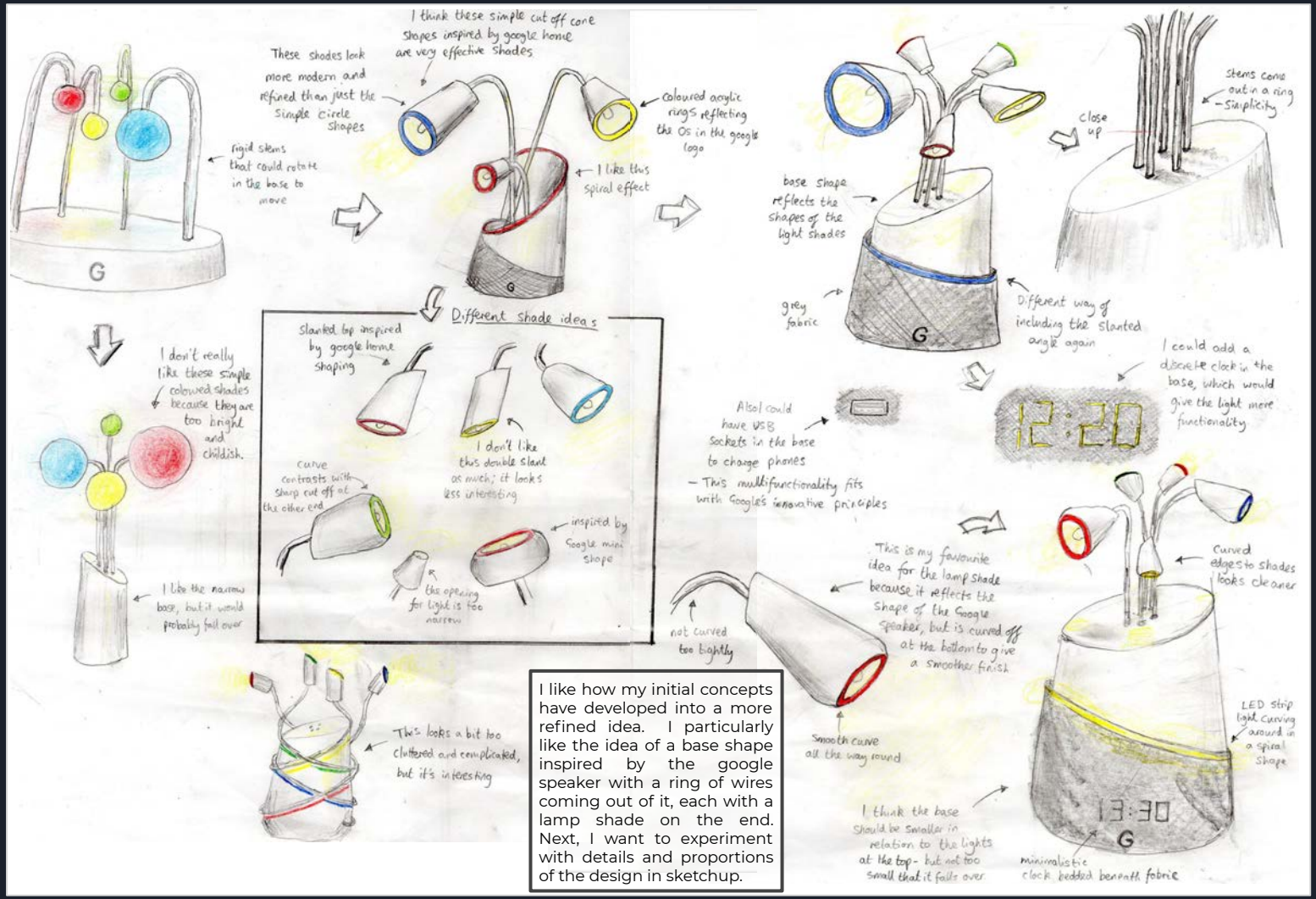
The original piece is formed from a hard plastic at the top and either a metal grill speaker or a fabric covered speaker cladding the bottom. The four LEDs on the top indicate the status of the device; whether it is listening, speaking or thinking for example. They make it seem more 'alive' and, along with the organic, curved shape of the product, allow it to be accepted as a living part of the home. My transcription made from blue foam also has this organic form, but I feel like the base could be curved even more to match the profile of the original and give it an even smoother feel.

The speaker has a peaceful, inobtrusive feel, and doesn't feel like a piece of technology, more like a sculpture or ornament. The curved speaker grill disguises the fact that it is in fact a speaker and suggests it is just a textured surface. Overall, the mood is playful and decorative - there is no visible technology or screens that make it seem too futuristic. Google has tried to integrate hi-tech technology into an attractive quirky speaker, so that the user trusts it as a product. My piece also has this playful mood due to using the same interesting shape as the original.

INITIAL IDEAS - LIGHTING

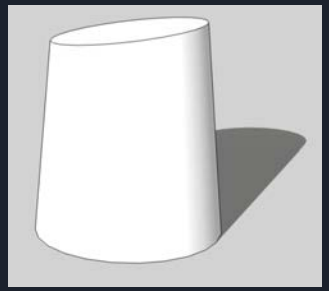
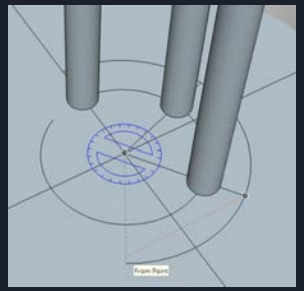
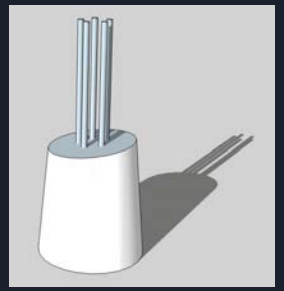


INITIAL IDEAS - LIGHTING

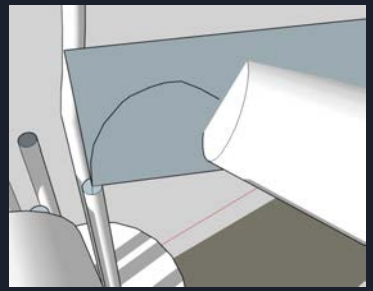


I like how my initial concepts have developed into a more refined idea. I particularly like the idea of a base shape inspired by the google speaker with a ring of wires coming out of it, each with a lamp shade on the end. Next, I want to experiment with details and proportions of the design in sketchup.

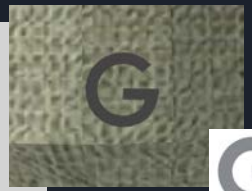
Development modelling

In sketchup, I started by building up the base shape for my most developed design idea. I decided on 5 pipes coming out of the base, each with a light shade on the end. Although Google only has four colours, I decided that five would look more aesthetically pleasing than only four as the pipes wouldn't line up in your line of sight as much as if there were only four.

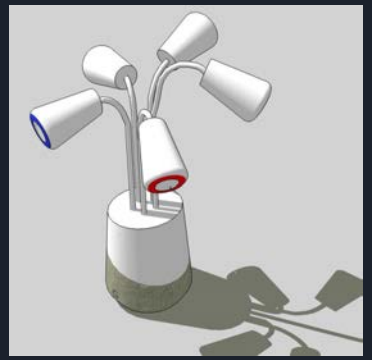



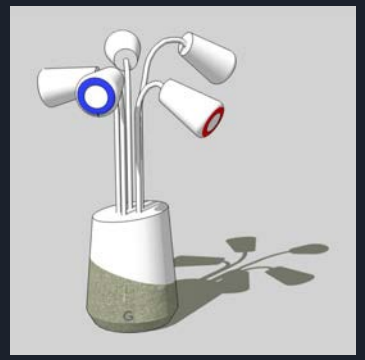

I built the lamp shades from the same basic cut-off-cone shape as the base, inspired by the google speaker, with the slanted end. I then added a curved end to make the shape smoother and more modern, and a burst of colour surrounding the light opening. I then added in curved rods connecting all the shades to the base. In my product I think that these should be able to bend slightly for practicality so you can angle the light for different purposes.

I also added a G google logo to the fabric - on my actual product I would need to focus more on making it accurate, because my simplified version doesn't have the exact aesthetics that the real logo has.

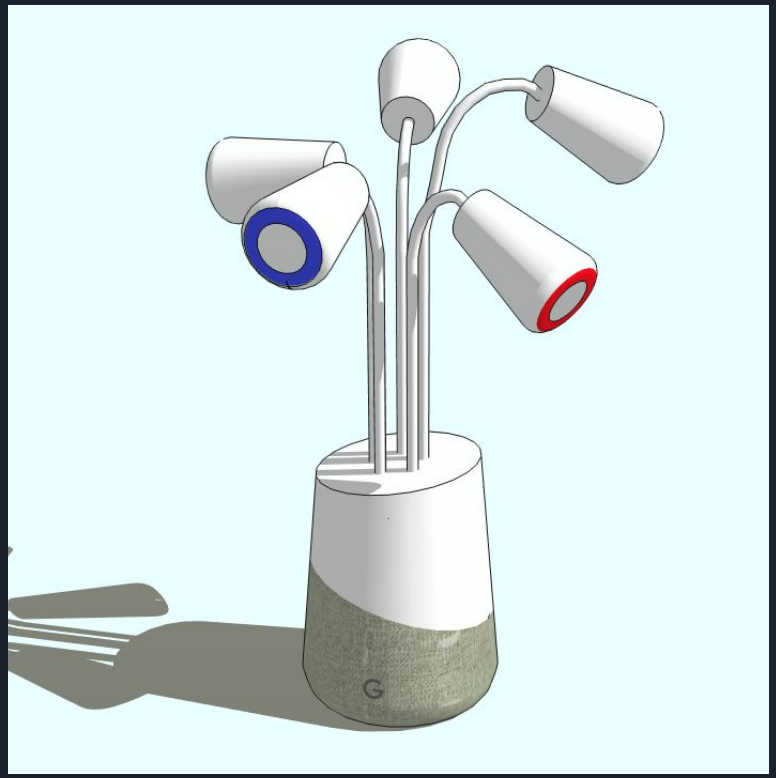
I then experimented with adding some texture by using a grey fabric as seen on some google hardware products. I think this use of material makes the light more homely and is also distinctive of google products. I decided the best position to have this textured part is on the opposite slant to the top of the base, as in the picture.

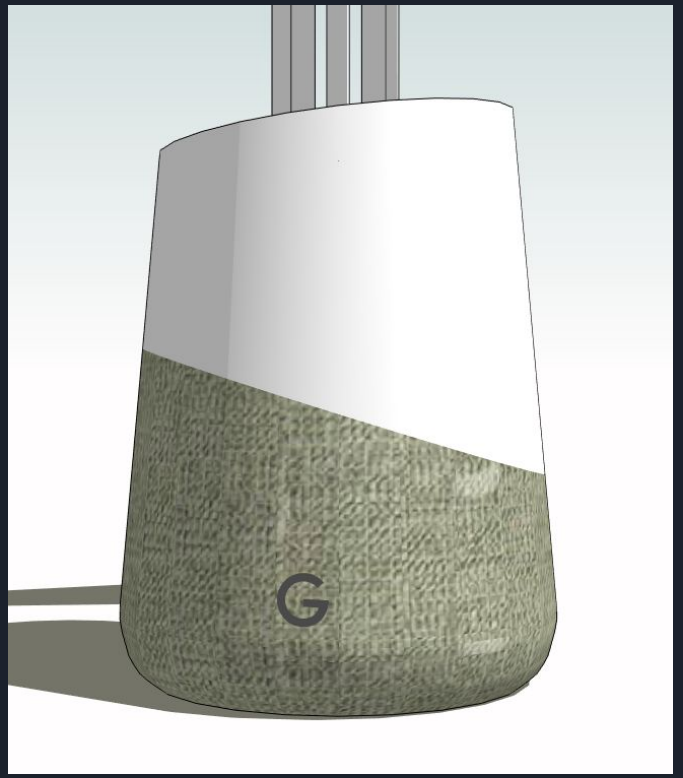


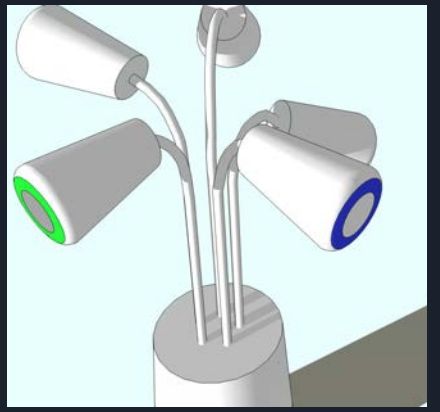


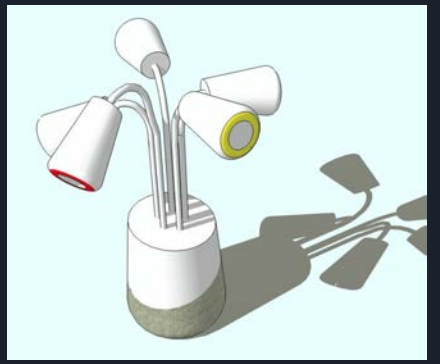
These shots show some different angles of my model. I really like the playful appearance of the light, and how it is simple in colour with the four distinctive google colours around the lights. I want to refine the profile of the base, because at the moment there is a very sudden angle which I think would look nicer if it was smoothed out, like in the original Google home speaker which inspired the product.

Final design proposal







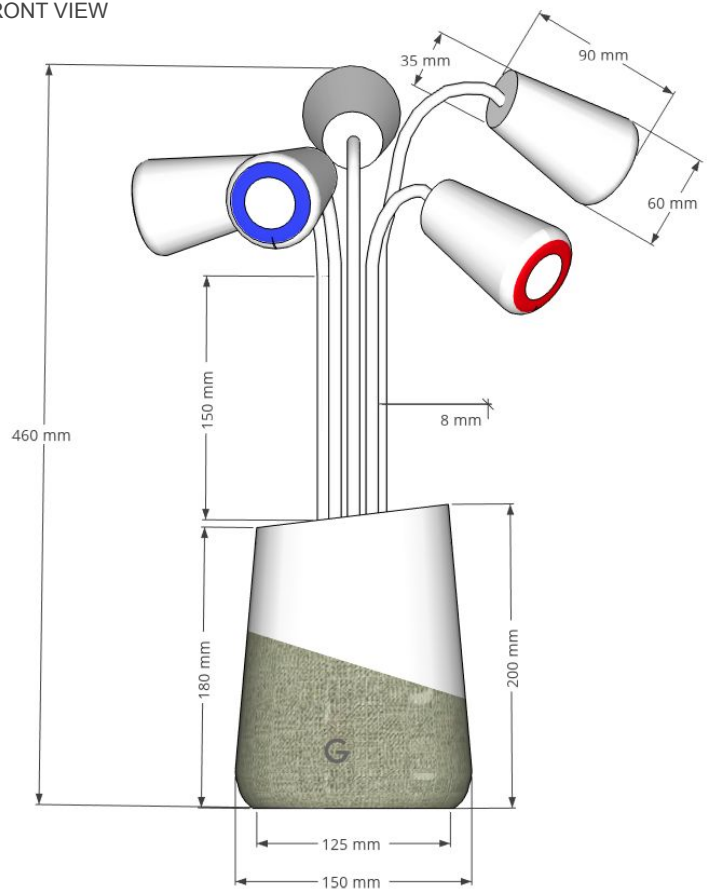


In my design, have refined the profile at the bottom to be more smooth, which I think looks better. It also makes the product look simpler as there are no sudden changes of direction, just a smooth curve. I like how the light is quite quirky and looks almost alien-like due to all the shades at different angles. This, along with the shape of the base and the 4 distinctive google colours popping out, I think gives it the feel of a Google product.

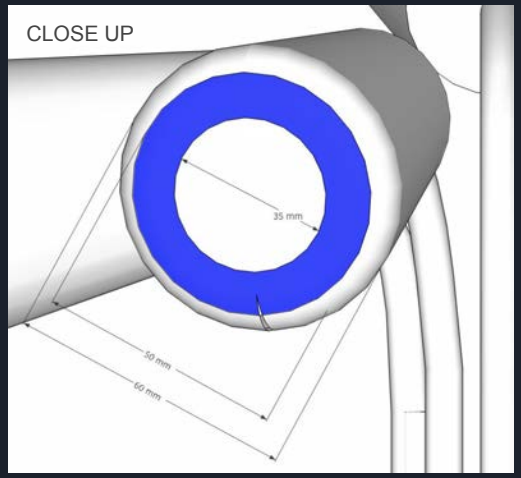
Technical drawings

All the 5 lampshades have the same dimensions as shown.

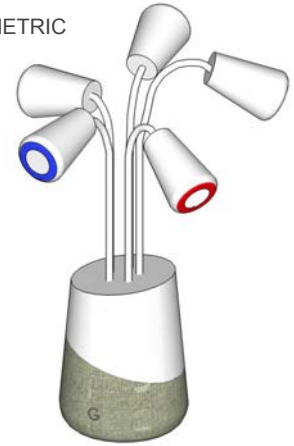
FRONT VIEW



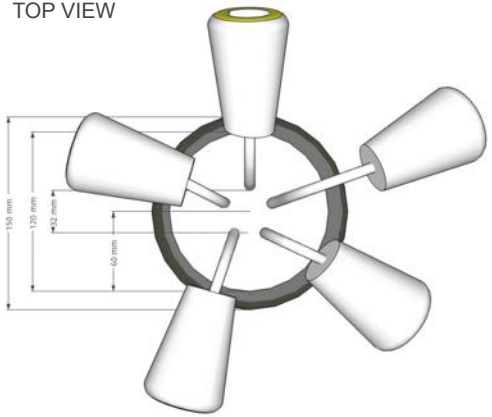
CLOSE UP



ISOMETRIC



TOP VIEW

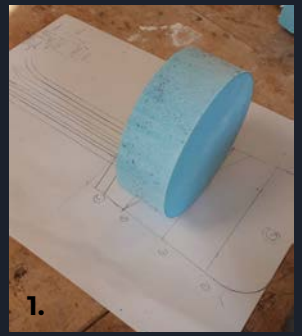


My prototype is going to be made from foam, but the real product would probably be made by injection moulding plastic. This is because the base would have to be hollow to incorporate the electronics for the lights. The 'stems' holding the lights should be solid for most of their length, with a flexible section at the end so the lights can be angled. The actual light shades themselves would have to be made of a light plastic so they aren't too heavy to make it fall over.

The coloured rings around each light could be made from coloured acrylic, as it is bold, shiny and bright and would contrast well with the smooth whiteness of the the rest of the product.

The bottom half of the base would be covered in a grey fabric like the one covering the Google mini, but on my prototype I will probably use a different coloured foam to represent the change in texture.

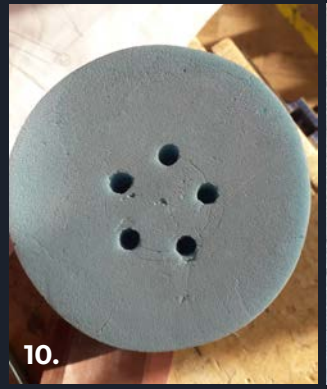
Making the base



I started off using a scale drawing to cut out circles of foam about the right size for the design. The circles get slightly smaller at the top so I can smooth the edges and create the cone shape.

I then cut the angles in some pieces with a tenon saw to create the change in colour halfway up, and the slant on the top. The right picture above shows the pieces being glued together whilst being weighed down with metal blocks.

To create the right shape for the product, I used a rough file to slant the sides and create the curve at the very bottom. Afterwards, I used smooth files and sandpaper to create a smooth finish.



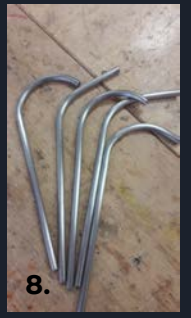
I marked out where the holes should be drilled using a compass and protractor. Using a pillar drill to keep the holes vertical I drilled 7mm holes so that the 8mm rod would fit tightly.

Using a craft knife I carved in the google G logo into the base so that the product is even more recognisable as the google brand.

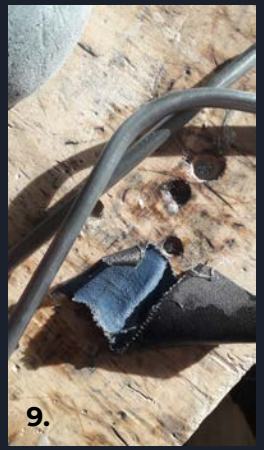
To fill in the imperfections and gaps, I used filler and then sanded it smooth again. Once the surface was smooth, I painted it white and grey to hide the filler and make the model look more realistic.

Making the top

To make the shades, I rounded the foam into a cylinder from a rectangular block. Then I tapered the sides and cut the end at a slant to form the shape. Finally I used sandpaper and a smooth file to clean the edges up.



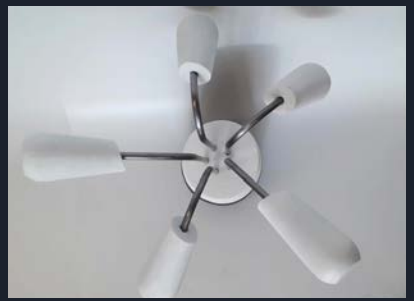
The rods supporting the light shades would be made of an easily bendable, plastic coated rod in my final piece, but for my prototype I decided to use metal rod because it is easy to bend and get to the right shape.

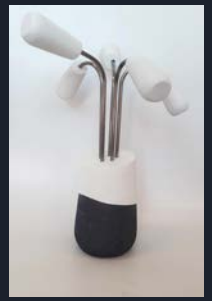


I cleaned the steel rod with emery cloth and wet and dry paper to give it a shiny finish, and then assembled it into the pieces of foam.

Finally, I used filler on the lamp shades, sanded them and painted them white too for the final finish.

Final photos and evaluation

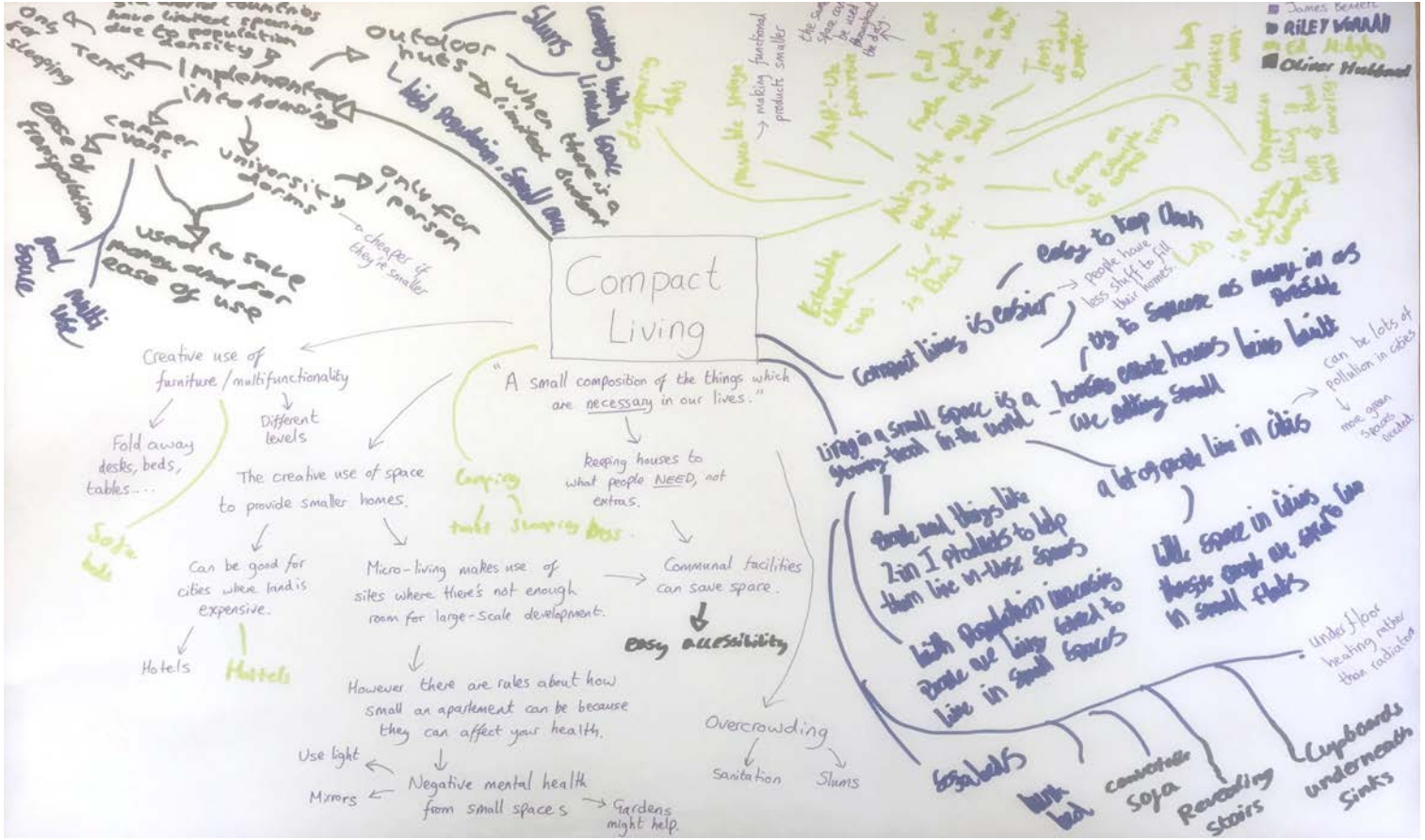




I am really happy with the final prototype; I think it looks quirky and interesting and fits Google's brand well, especially if I could have included the coloured circles on the rims of the lamp shades. I feel that when these colours are included in the final product, it would really tie google's white and grey hardware to the vibrant funky colours seen online. It would make this "alien" light look even more alive and comical.

One aspect that I particularly like in the end prototype is the shadow of the shades on a surface when the sun shines on them; I like how the vertical lines cross over and are interrupted by the lamp shades.

Initial Group Mindmap



Compact Living

Compact living is the philosophy of living in as small a space as possible, with only things that are necessary for our lives. Compact living is generally beneficial to the environment, because people live on a smaller footprint, have less belongings to fill their homes and use less energy to heat them. It is important to design spaces effectively so that we can have these environmental benefits whilst still having a good quality of life.

Houses, rooms and items of furniture can be designed to improve people's lives when living in small spaces. In my project I could perhaps think about how people are affected when they live in a small space, and how clever design can make people enjoy their homes more.

Collaborative Learning

We produced a mindmap in a group to come up with potential ideas around the topic "compact living". This mind map shows lots of different areas of the project which we have initially considered. It was produced through conversations and research conducted collaboratively.

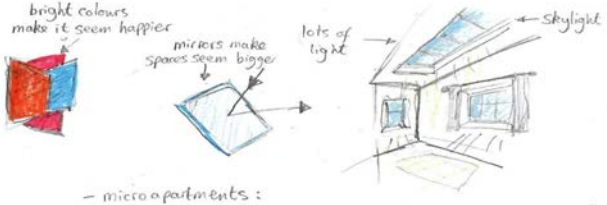
Collaborative learning has enabled me to work with others in the group who I would not ordinarily have had the opportunity to work with. It also allowed me to listen to, and take into account other people's observations and thoughts, areas which I would not necessarily have investigated if producing this initial research mind map independently.

COMPACT LIVING

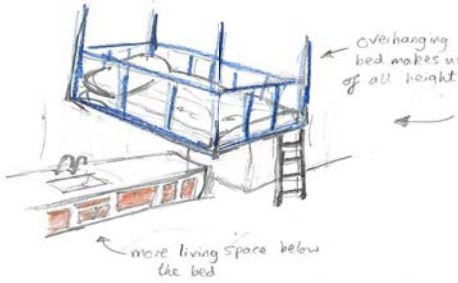
HEALTH

- Some small accommodation might not be suitable for elderly, or disabled, people:
- There are normally many steps, ladders or levels to fit in more storage.

If people are living in small spaces it can have a negative effect on them mentally.
They might feel claustrophobic or just cramped



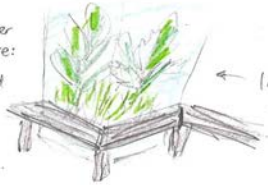
- micro apartments:
  - the same room is often transformed for multiple different purposes.
  - can make people feel confined unless cleverly designed



HOUSING CRISIS

- overcrowding: both in poor countries and the UK where there aren't enough affordable houses
- this can lead to disease spreading more easily, or poor health
- lack of gardens can also reduce greenspaces which provide tranquil areas to relax

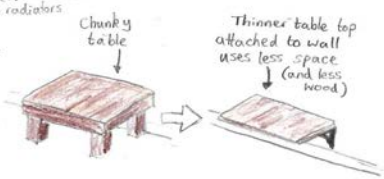
- Items could be integrated together or built into walls to save space:
  - such as using LED lighting around the corners of the room rather than lamps
  - or 'floating' stairs built into a wall with space under
    - makes it seem bigger



SUSTAINABILITY

- Small houses are more efficient to heat than large ones – less space needed for radiators too
- So it is beneficial to adapt to smaller homes
  - Less materials needed for small houses
  - Small homes also reduce the amount of 'stuff' needed to fill them – less waste

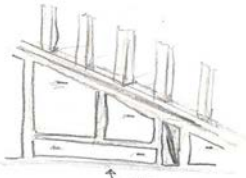
Reduce the size of things to fit in, and use less material: good for the environment



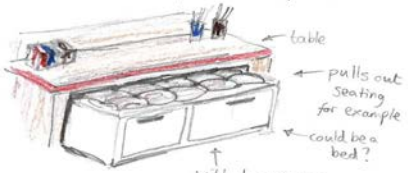
- Use of technology to improve space efficiency
  - Voice control, screens that can do many functions etc.

STORAGE

- often houses are big enough, but not well designed, so have clutter everywhere
- this can reduce how big a house feels.



- multifunctional spaces






Compact storage










Green spaces











Adaptable furniture












Psychological Health



Possible Projects

Psychology of Small Spaces

When living in small spaces, people can feel claustrophobic and as if they can't fully relax. For my project I could investigate ways to design small spaces to make them feel larger and more comfortable to be in. For example cool colours that bounce light around and mirrors can be used to make a room feel bigger. In contrast with these cool colours, bright features can lighten the mood of a dull room.

I think it is important to address the mental impact of small spaces because living in small spaces reduces our impact on the environment, but people need to be happy and healthy too. As the population grows more people may have to live in very small spaces, and they should be well designed to be comfortable to live in.

Another psychological disadvantage of small homes is that they usually lack space for gardens. I could also look into incorporating green space into this project. Greenery can help people relax and could mentally help link the living space to the outside, making the room seem bigger.

On the other hand though, some people do enjoy the order of a small space, especially if it is well organised. For some people, small spaces can feel safe and homely, so that should also be considered with this project.

For my project I could consider designing a piece of furniture, or a room with the psychological impact of the space in mind to make people feel at home in small spaces.

Designing Innovative Storage Solutions

Houses can often seem smaller than they actually are because they aren't well organised. For this project I could think about how to design storage which fits neatly into the home and maximises the space available. For example the space under the stairs could be designed to fit in storage for specific items.

I think it is necessary to address storage because it can help people to be more organised in the space they already have, rather than having to extend their houses or build new bigger houses. A potential disadvantage of tailor made storage solutions is that it can be expensive to individually design storage to fit into people's rooms.

For my project, I could look at a specific situation where storage is limited and think about ways to make the space more useable.

Adaptable Furniture

Furniture takes up a lot of space in homes, so I think it would be good to design smaller furniture; that is furniture made from thinner materials, or perhaps furniture stored inside other fittings that could morph from one item to another. For my project I could think about how to maximise the efficiency of a piece of furniture and see how many uses it could have. Also using thinner, smaller materials is sustainable because it reduces the impact of people's home on the environment. This type of multi-use furniture would help more people live in small spaces comfortably and make day to day life easier.

A potential problem with adaptable furniture is that people may have to throw out existing furniture to make room. This doesn't fit with the principles of using less so you have less waste. However, the environmental benefits of living in a small space and population pressure are great so I think designing furniture for multiple uses in a small space will be vital in the future.

As well as the environmental benefit of having less 'stuff' in our homes, I could investigate how adaptable furniture improves ease of living in a home when designing solutions.

Psychology of small spaces

Negatives

There are many issues with small space living that I could try to address with my design. One problem with very compact living is that people can feel confined and as if they don't have enough space to express themselves.

Tricks that can be used to make a space feel bigger and less confined include using mirrors, light coloured walls, greenery and lots of skylights and windows. These make the space lighter and stop it from feeling stuffy and boxed in. Also when researching the psychology of small homes, I found that the more people can express themselves the more they feel at home, so expression is also important in a small space.

"When we think about micro-living, we have a tendency to focus on functional things, like is there enough room for the fridge but an apartment has to fill other psychological needs as well, such as self-expression and relaxation, that might not be as easily met in a highly cramped space."

Professor Samuel Gosling, University of Texas

To improve peoples' state of mind in small spaces, they generally need to be able to express themselves and change the space around them regularly so that it doesn't become boring and monotonous. This fits well with my other focus of adaptable furniture, because furniture that can be easily changed around will not only improve the efficiency of space, but also stop people from being bored by their home.

Positives

There are also benefits of compact living because living in a micro-apartment or small house can also have a positive mental effect on people, if it is designed well with health in mind.

Small spaces are generally cheaper and easier to furnish, heat and clean, so people can have less stress about their house. Another benefit of small space living is that people have less stuff, so can feel better about themselves without the impact of their waste. In general, people who live in a small space value what space they have more, and take more pride in their home and possessions.

"Despite finding large increases in housing satisfaction, part two found no positive effect of moving to larger accommodation on subjective well-being."

Foye, C.
The Relationship Between Size of Living Space and Subjective Well-Being.

From my secondary research, I found that, in general, people *feel* more satisfied about their accommodation when they have a larger house, but their actual well-being can be just as high in small accommodation. This supports the idea that compact living can be feasible and should be encouraged. Homes need to be designed to maximise satisfaction in a small space. I could look into designing to make spaces feel larger and having clever reconfiguration designs to create interest and satisfaction.

In conclusion, living in a small space can have positive effects on mental health if the space is designed with flexibility and a sense of freedom in mind. Specifically rooms with lots of natural light and mirrors can make it feel more open and airy. Also the ability to reconfigure a room, however small it might be, and change it to suit your mood can stop you feeling confined and allow you to enjoy a lifestyle in a small space.

Adaptable Furniture

As well as saving space and making compact living more practical and efficient, adaptable furniture can change the feel of the room as it is reconfigured, and allow people to express themselves by changing the purpose if their living space, which can improve mental health.

IKEA Furniture

On the IKEA website I found some examples of existing products that can be multifunctional and adaptable.

This coffee table has wheels on the base so it can easily be moved if it isn't needed anymore. Also the large rack at the base provides lots of space to store clutter to keep it off the floor. The use of a wire and thin steel frame makes it light and stops it from taking up too much space. However, I think that that it looks a bit industrial and might not feel homely in a small space.

I also found this room divider which is a mesh screen to split up spaces. It can be customised by clipping pictures or sheets for example onto the mesh to make a more solid divider. It is useful for multifunctional living because it provides privacy in what might be a single multi-use space. Although it takes up room, it is also valuable as a seat and to allow people to change up their room. I do feel that this particular product is quite expensive for what it is, so I would have to think about how much people would be willing to pay for specialised furniture.

LALLERÖD
Coffee table, 51x51 cm
£45
★★★★★ 5.0 (3)

VEBERÖD
Room divider, 85x180 cm
£95

Primary Research

These tables in my living room slot together so you can either only have one large table, or two coffee tables as well. This makes use of dead space under the table, and means that more tables are available when necessary. This idea of tables or perhaps chairs being hidden away inside something else until they are needed might be helpful in a really compact space.

This is a sofa at my Grandma's house which can fold out easily into a bed. This is probably not practical for an individual to sleep in every night because it requires a lot of effort to fold out, however it is good to save space for guest beds. I could take this idea further and think about how I could design furniture with two functions that can be switched between easily so that they are simple to use everyday.

"Use multipurpose furniture that you can easily rearrange and move depending on your mood and the situation."

Åsa Dyberg, interior designer
Ikea Website

Micro apartment in Taipei by KC Design Studio

This is a tiny 46 square metre apartment designed with multifunctionality at its heart to make the most of all space.

For example, in the picture above you can see the kitchen worktop that pivots out into the middle of the space to become a dining table. This is effective, because at different times of day the same item has different uses, minimising both the materials used and the redundant space used.

Also in this apartment is a wall with slots in that can be used to hang various shelves, pictures or coffee table type tables sticking out from the wall. This allows the room to be repurposed for different uses. I particularly like this idea because it makes use of a vertical wall and uses no floor space, while still allowing flexibility. To add to this idea even more, I could explore how two walls like this could perhaps be used together to support larger items of furniture?

Situation, Problem, Brief

Situation

Compact living will probably become more and more prominent over the next few years to ease population pressure. With the worldwide population expected to rise to about 8.5bn in 2030, with an increasing number of people in cities, people definitely need better, smaller homes. In an average home there might be slight space saving ideas such as a sofa bed, but often they are cumbersome to transform only for special occasions. In a really small space, places need to be really multifunctional; for example be a table one minute and then be used as a chair the next minute.

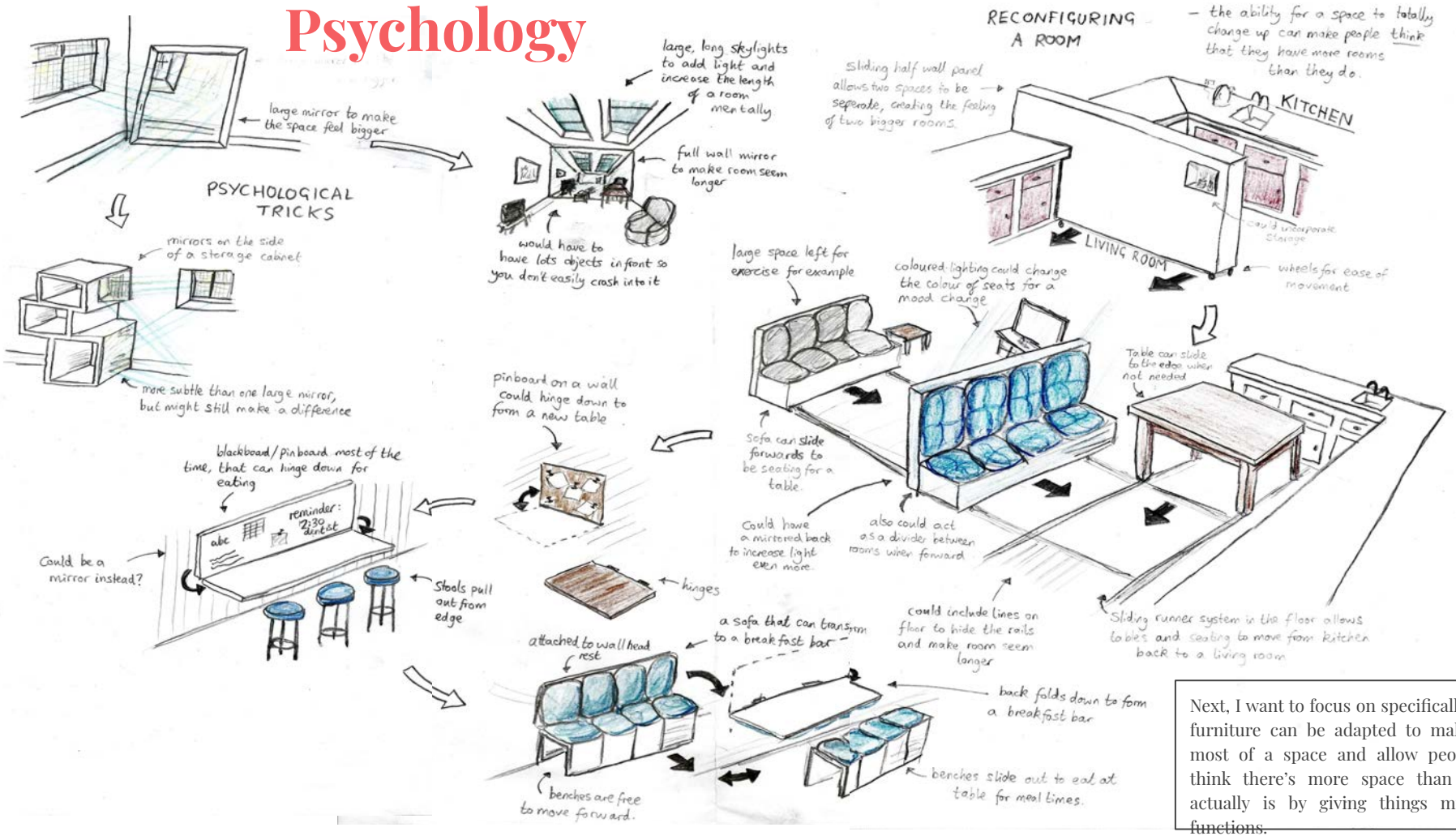
Problem

Living in small spaces often has a negative impact on people's mental health and their life satisfaction because people don't have enough room to express themselves and live a healthy lifestyle. This can be heightened when spaces are unorganised, cluttered, or monotonous, making people feel confined even more. There is also the practical problem of compact living; there not being enough space to physically contain the essential work spaces, sleeping areas and seating areas required for life. The problem is twofold; firstly to improve people's living standards in small spaces mentally and secondly to improve their ease of life practically. I think that often designing a practical solution can help both aspects because it can allow people to have more control over the space.

Brief

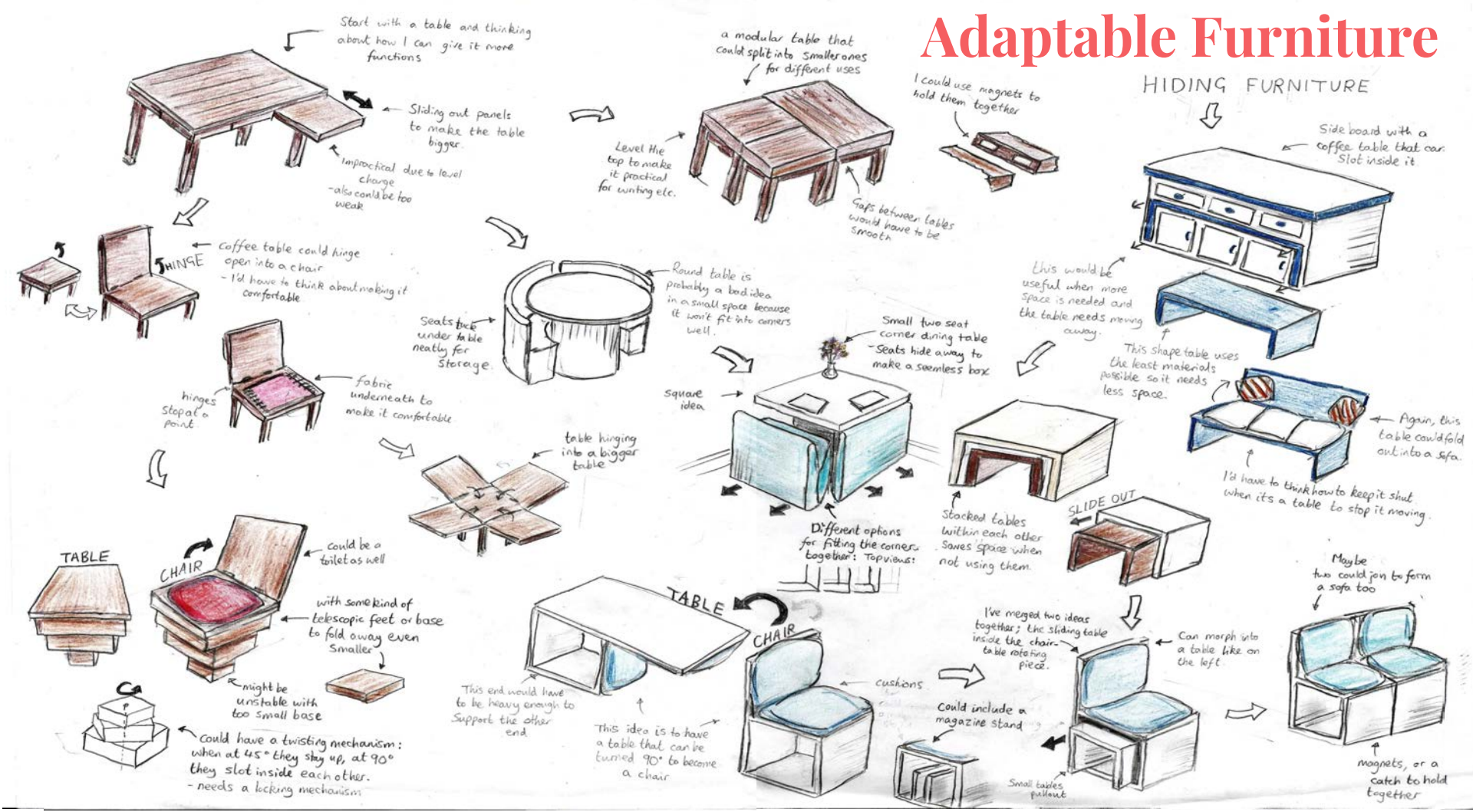
To design an item of furniture or a room that maximises space efficiency and mental wellbeing. I especially want to think about hiding furniture away, or totally reconfiguring an item easily so that it can change the feel of a room and serve two useful purposes. This not only would help save space, but also make the space feel bigger as it can change identity into a new item. I also want to think about how items could transform in an interesting and easy-to-use way, for example not just ordinary folding legs on a table, but a seamless turning or folding mechanism to make them more interesting for the user. Furthermore, the more uses a single item has, the less impact on the environment it has, because less materials are used, so I also want to think about using minimal materials in my designs. Overall, I want the product to be simple to use to be hassle-free for the user and improve their standard of living.

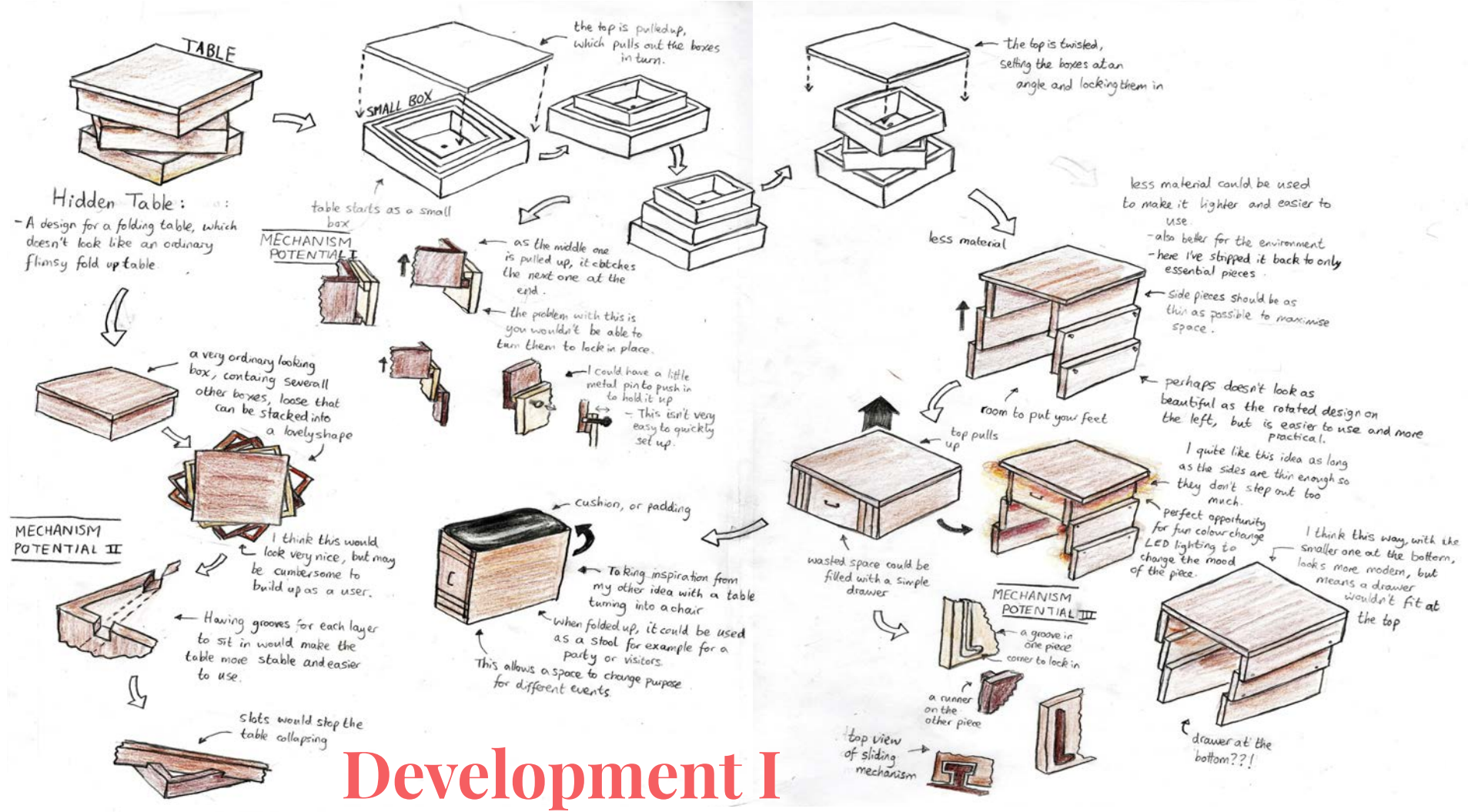
Psychology



Next, I want to focus on specifically how furniture can be adapted to make the most of a space and allow people to think there's more space than there actually is by giving things multiple functions.

Adaptable Furniture



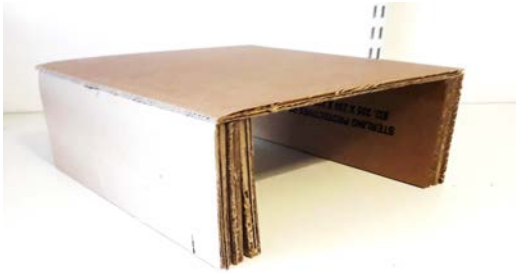


Development I

Modelling

I decided to start modelling the design in cardboard, to figure out exactly how the complicated mechanism would work.

I layered 3 pieces of cardboard together to create a groove that would allow a runner to fit in tightly. There is a large gap in the middle layer and a smaller one in the surface layer, to stop the runner pulling out of the groove. For the runner I used a nut and a washer glued together. At the bottom of the groove, there is a little corner to push the nut across to lock the piece in place.

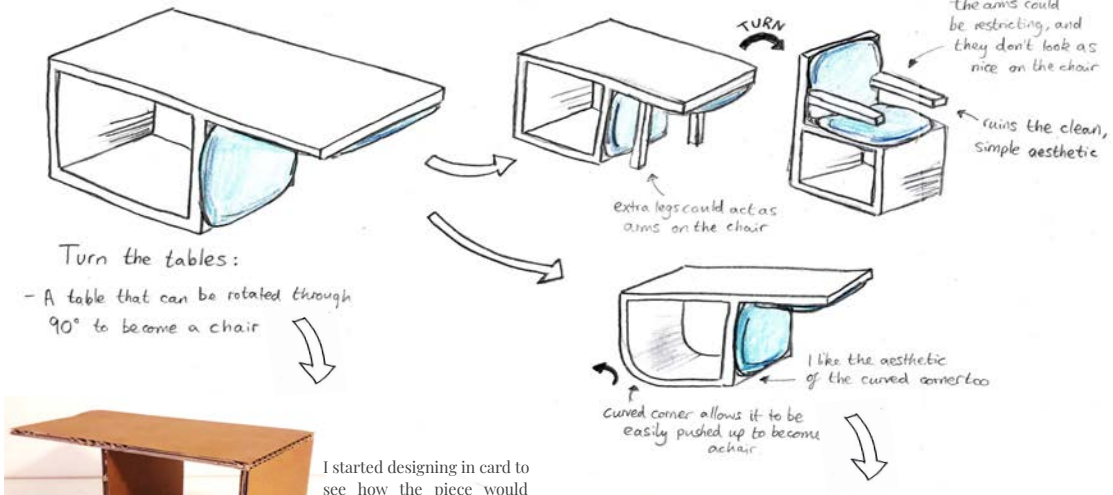


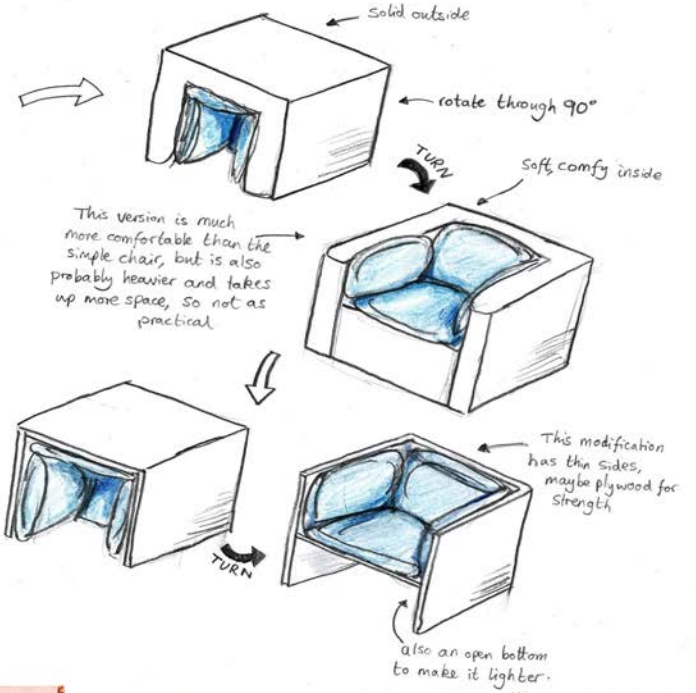
This first picture shows one side of the table, showing the grooves in the sides.

Here is the finished table model, in both the flattened down and upright state. The cardboard mechanism is a bit loose so the table looks a bit wobbly, but if it was made out of wood, the mechanism could be tighter and allow for a stronger table.

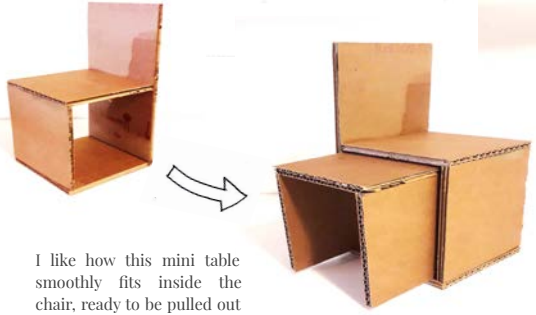
Overall, I feel that this idea is good and it is satisfying to pull up the table from the little box. However it only really has one purpose as a table and I don't think it particularly fulfills my brief to have a piece which is really easy to transform. I could imagine that the piece would take up too much time time to fold away to be done easily on a regular basis.

Development II



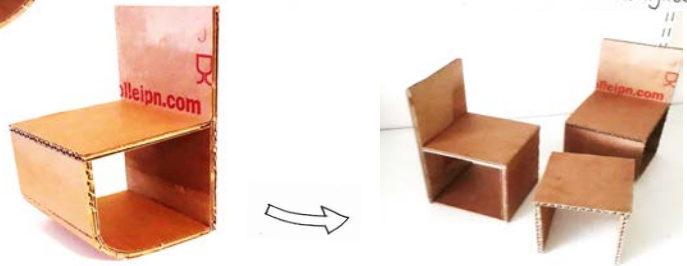


I started designing in card to see how the piece would work in real life because being able to turn it around is key to the design.



I like how this mini table smoothly fits inside the chair, ready to be pulled out quickly.

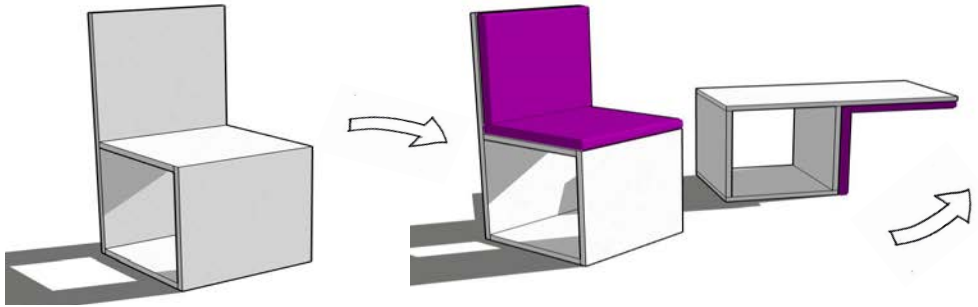
I particularly like how easy this version is to turn over, but it would need to be pretty strong - when made out of card it is too flimsy. It is also a little bit unstable to sit on.

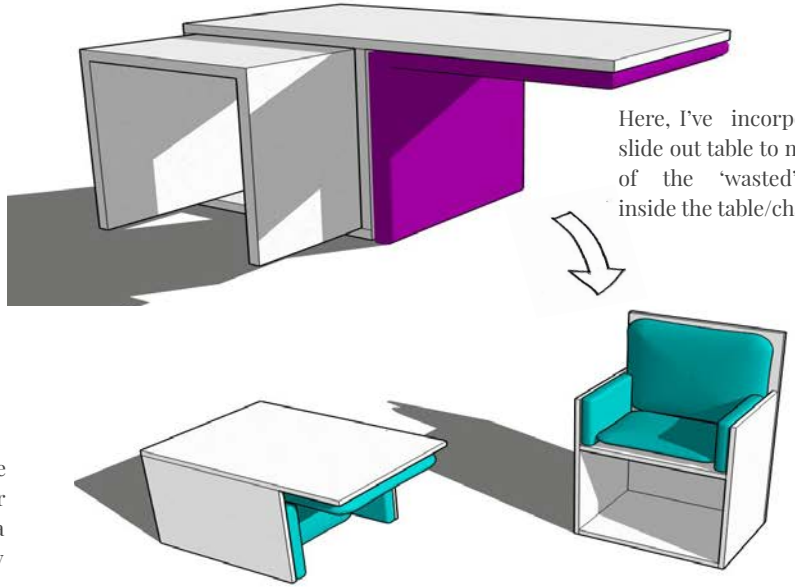


Showing how the tables can be fully transformed into chairs and a smaller table.

CAD Development

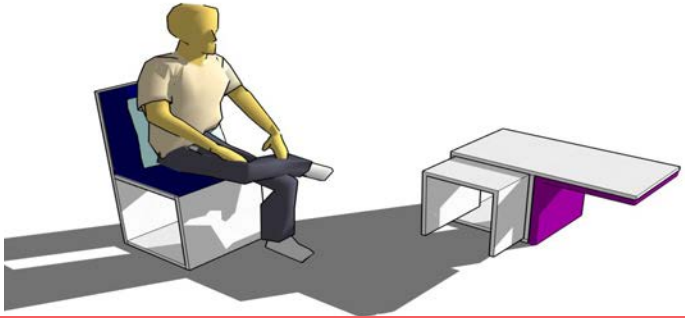
I have decided to continue with the table/chair design, incorporating the table which can be turned over to become a chair. This is because it is the easiest to transform and I think the simplest to use, whilst getting maximum space efficiency. Compared to existing foldable products or my other design with a folding mechanism, I think this piece would be less hassle to use - the user can simply turn the table over to make a chair and back again.

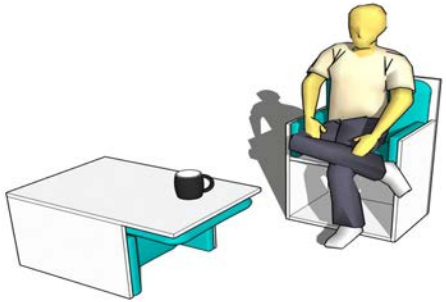




Here, I've incorporated a slide out table to make use of the 'wasted' space inside the table/chair.

I started with a simple chair design, that could be made from MDF. I then added cushions, to make the chair more comfortable. The cushions need to be soft and squishy enough for make a comfortable chair for someone to relax in, but also not be too large when the piece is turned over as a table. I choose a bright colour for the fabric to contrast against the white base colour and add interest. However any colour cushion could be used to suit the user's taste and allow them to express themselves.

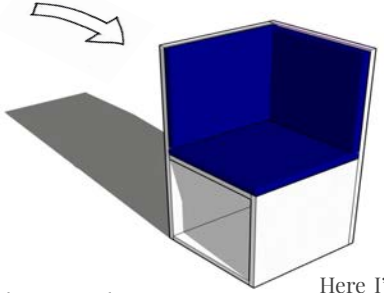




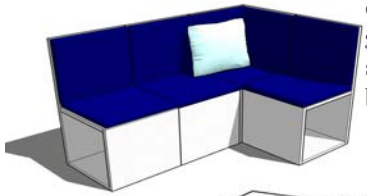
Some people looking at the designs said the chair might not be that comfortable as someone's only chair in a small apartment, so I thought about a larger, more comfortable version, which could still have the same dual purpose feature. Above in an armchair with more cushioning than the main seat.

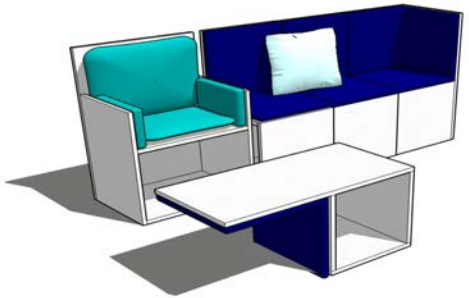
More CAD Development

Finally, I want to combine these variations on chairs and tables into a product where someone could have multiple of these items and reconfigure them regularly to make a space they want to have. This would enable people to have more control over their room and to rearrange it for different purposes.



This shows four pieces joined to make a corner sofa, which is good for if you have guests in your small house and need extra seating. With cushions the corner would be really comfy to lie in!



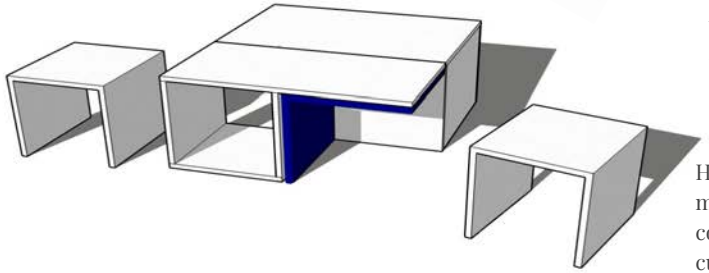


This shows a potential idea to allow the pieces to connect together, so they are more versatile. In the left of each chair is a recess and a receiving pin, and sticking out of the right side is another piece of metal which slots inside to hold it in place. This mechanism would be easy to push and pull apart, and wouldn't get in the way when the piece is turned to be a table.

Here I've designed a corner piece; it can still be turned over to make a table as with all the other pieces, but it can join together with other pieces to make a corner sofa.

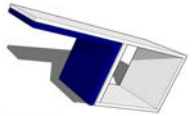
I think it would be best to design the armchair to have the same depth as the rest of the chairs, so that when it becomes a table it is the same height as the rest of them. It also means it would fit nicely against a wall with the other pieces, saving space.

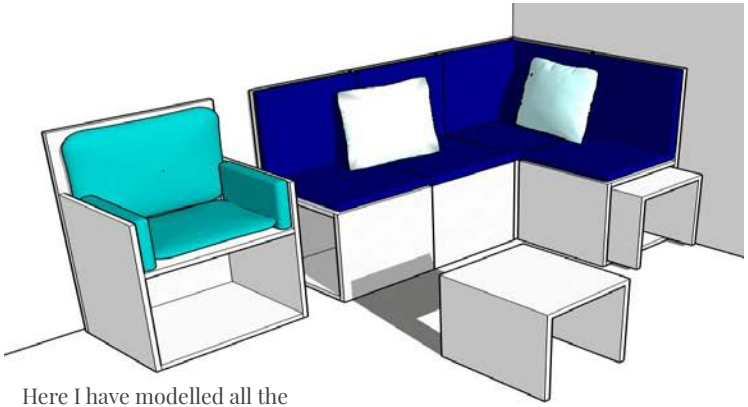
This is an example of the type of push clip that might work to hold the chairs together.



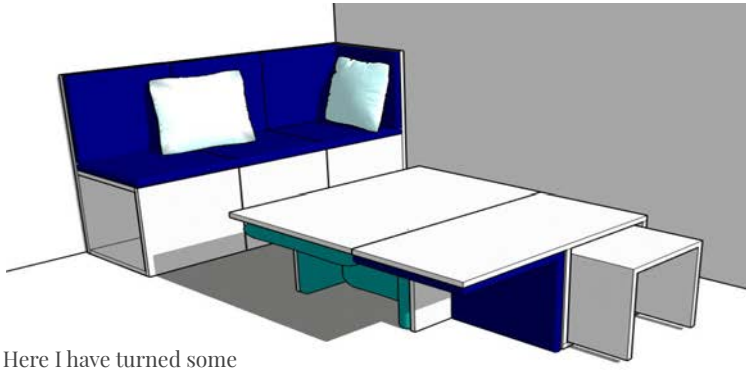
Here I have turned the pieces around to make a large table, and the mini tables could be used as stools, especially if a cushion was put on them.

Final Design Proposal - Turn the tables

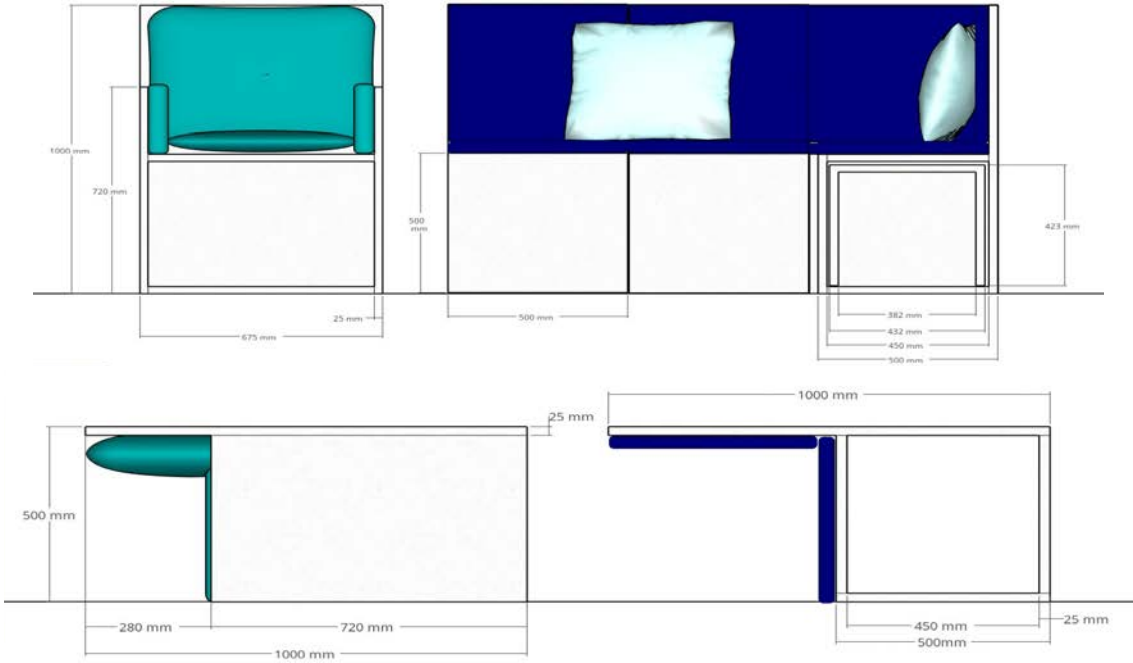




Here I have modelled all the
pieces of furniture upright as chairs



Here I have turned some
over to create a larger table and less seating.



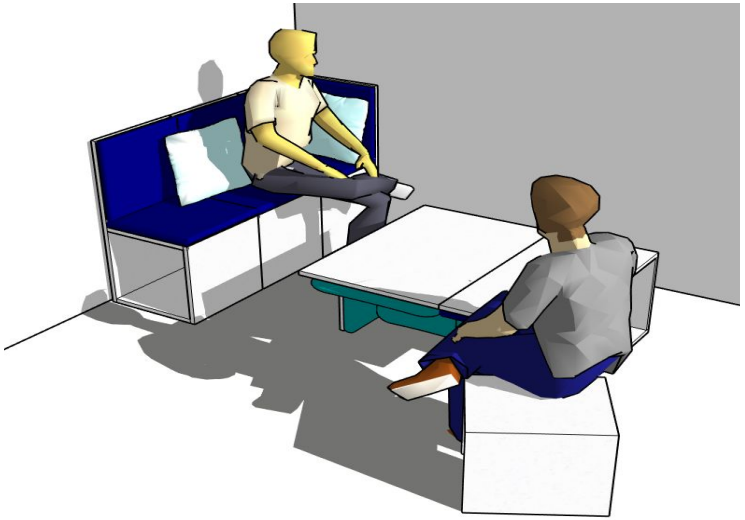
My final design for compact living is a set of four chairs/tables and an armchair/table. All the pieces have a smaller insert table/stool that can be used. The idea is that the chairs can pressed together to make a sofa when a few people want to sit down, and easily turned 90 degrees to from any number of small coffee tables or larger tables. The structure is probably to be made from durably painted MDF with attached padded cushions. I feel that this design enables total freedom for the user, because there are many different configurations it can be useful in. Hopefully, it will be good for maximising space efficiency and a sense of control over your living space in a small environment.

Evaluation, Modifications & Improvements

Overall, I am pleased with my final outcome because I think that it fits my brief to improve both space efficiency and mental wellbeing in a small space. I feel that it is more suitable than my other most developed idea, because of how easy it is to simply turn the pieces over to transform them, rather than fiddling about with a mechanism. The fact that a room can be changed around so quickly for different parts of the day can make the user feel like they have more room and ability to change the mood their space, so making them feel better about their accommodation.

I think the colour of the product is nice being white because it reflects light around allowing the space to feel more airy; but I think the colour of the cushions is important to be brighter to add interest. I think the product could come in various bright colours so people can have the freedom to choose their own colour to fit their own space and allow them to express themselves more. An improvement could even be to have interchangeable cushions, maybe with different patterns or colours so the user could change them around too!

If I was to develop the design further to improve on my design brief, I would think even more about the anthropometrics of my design and make the seats even more comfortable to relax in. I would decide on optimal measurements to get exactly the right height for the piece when as a table and when as a chair. To do this I could make scale models and test out different versions of the design for comfort and ease of use.



Any Questions?

- If you have any questions or concerns regarding the course, please do email me and I will be more than happy to help.

  MSmith@Brookvalegroby.com