

Product Design BSc(Hons)

Intro

Entry criteria

Course content

Careers



Intro

Product designers use creativity and problem-solving skills to develop innovative solutions that enhance people's lives.

Our Product Design BSc(Hons) integrates practical experience and theoretical knowledge in a supportive environment as you develop the skills to become a well-rounded professional. You learn to navigate every stage of the product development process, with the ability to design sustainable, socially conscious, commercially viable and technically sound solutions.

HAYDON SLOPER PORTFOLIO

I study: Product design,
Economics and Psychology

I'm Haydon I would like to study Product Design at the University of Brighton because I find the course appealing to me. This is because it has a combination between both hands-on practical work and theory lessons are what I like. I have liked Product Design throughout my school life and hope to can on with it after university. I have a very creative mind and like to express myself thought designing and creating projects.



SKETCHING

Sketching and drawing has always been my weakness, however through out my progress I have found ways to help me draw as well as practicing.

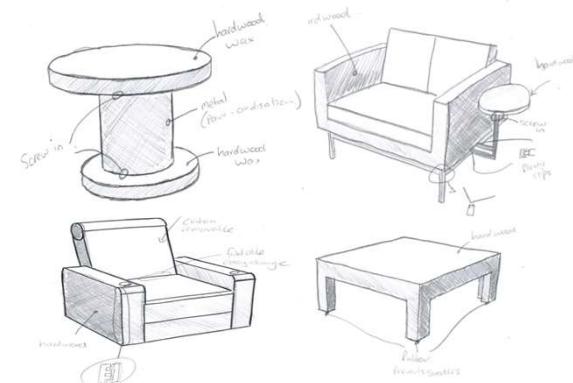
YEAR 11 COURSEWORK



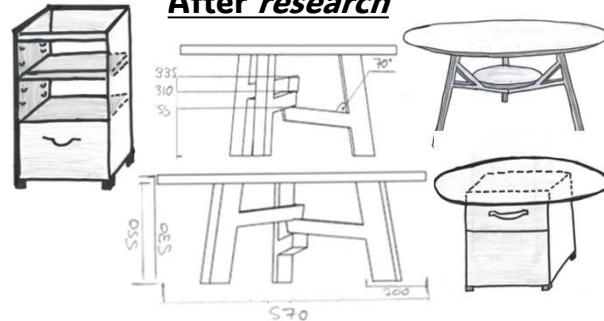
In year 11, these sketches are from a sketch book that had initial thoughts and ideas. This sketch went around with me, and I created rough sketches if an idea came to my head, hence the poor quality.

YEAR 12 COURSEWORK

Before research

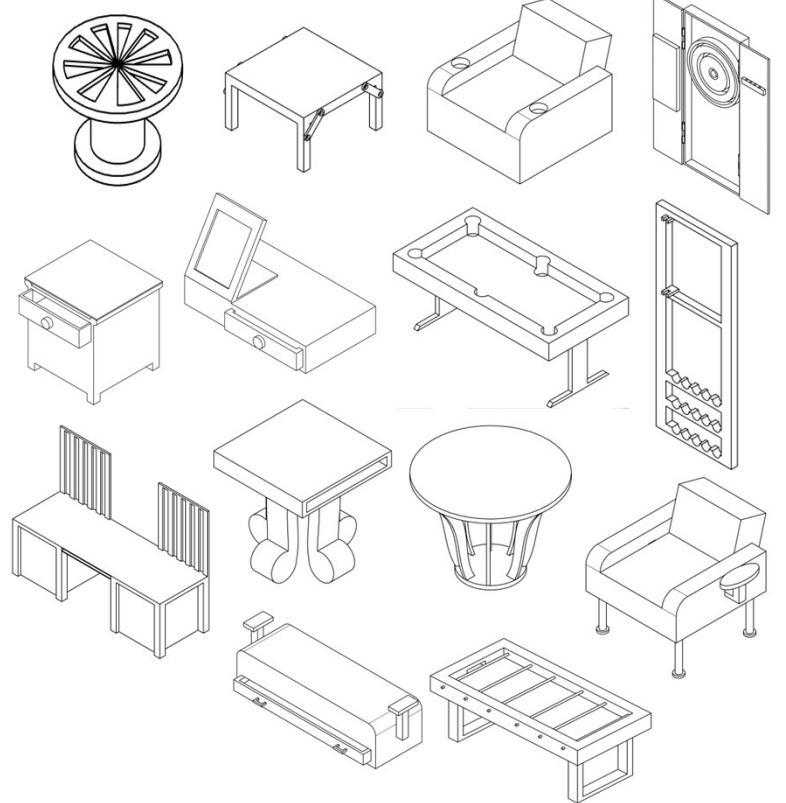


After research



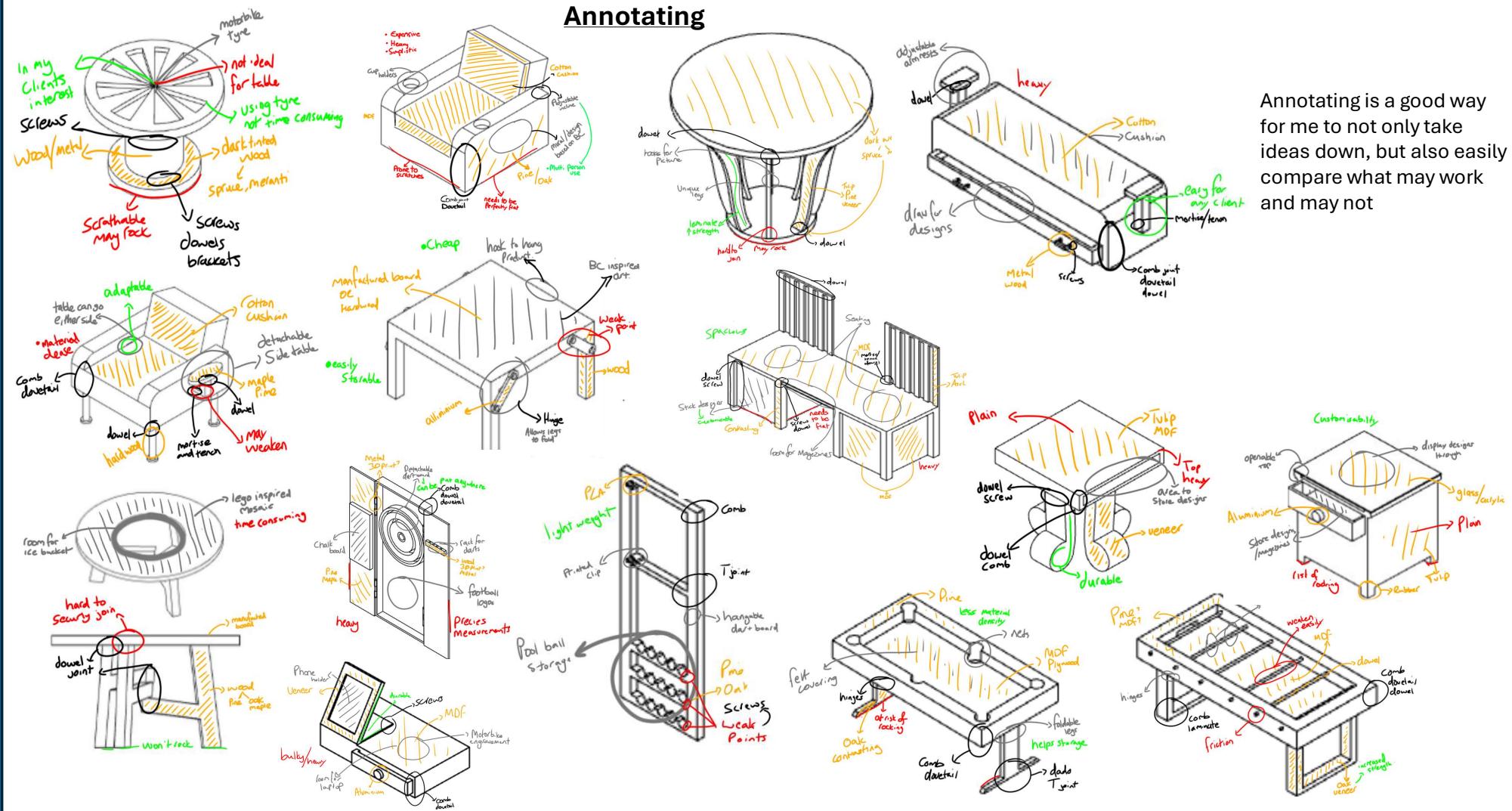
For my yr 12 project my client's issue was not having a place to put her drinks outside. The first concepts were trying to get a broad idea of what kind of product I was going to make; the second set of concepts were finalising what me and my client agreed to have on the product

YEAR 13 COURSEWORK



My year 13 project has shown a significant improvement in my sketching abilities as well as my ability to generate ideas. Developing my sketching on Onshape has help me become more time efficient as well as the sketches having higher accuracy

Annotating



YEAR 12 COURSEWORK

Generating ideas

YEAR 11 COURSEWORK

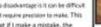
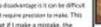
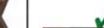
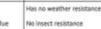
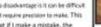
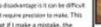
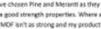
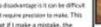
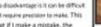
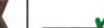
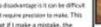
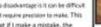
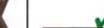
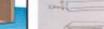
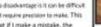
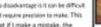
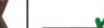
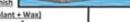
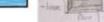
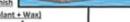
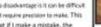
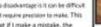
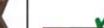
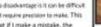
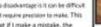
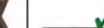
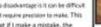
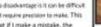
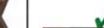
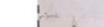
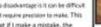
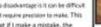
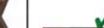
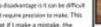
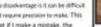
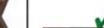
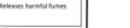
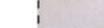
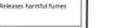
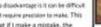
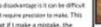
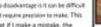
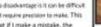
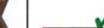
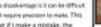
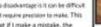
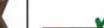
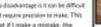
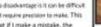
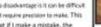
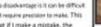
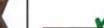
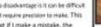
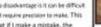
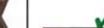
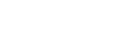
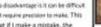
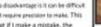
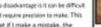
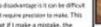
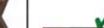
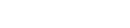
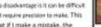
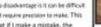
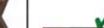
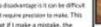
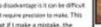
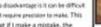
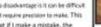
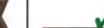
Generating and Developing Ideas

LARKMEAD School ■ Haydon Sloper

Haydon Sloper

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YEAR 13 COURSEWORK

Materials	Pros	Cons	Pine Wood	MDF Wood	Finishes	Joints	CNC Joint
	Light and easy to work with Resists shrinking + swelling Good elasticity	Easily damageable Not as durable as hardwoods Can warp if not dried properly				     	     
	Easy to work with Good nail, screw and glue properties	No weather resistance No insect resistance Can not easily				     	     
	Cheaper Very smooth It's very consistent	Heavy Easily damaged Can't support weight				     	     
	I have chosen Varnish. Both stain and paint have similar properties but Varnish doesn't require maintenance unlike them. This means I won't risk damaging my product when maintaining it, therefore prolonging its span.					     	     
Paint Finish	Pros	Cons	Stain	Varnish (Sealant + Wax)			
	Seals gaps in wood and makes it water resistant	Needs to be re-stain frequently or the job becomes time consuming				     	     
Finishes	Pros	Cons					
	Easy to apply Can hide mistakes Easy maintenance	Traps moisture Can be permanent Problems can reoccur				     	     
Pros	Cons						
	Protects scratches on wood Makes it waterproof cheap	Unpleasant colour Flammable Releases harmful fumes				     	     
Pros	Cons						
						     	     
Pros	Cons						
						     	     
Pros	Cons						
						     	     
Pros	Cons						
						     	     
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Pros	Cons						
			<img alt="Diagram of stain application" data-bbox				

Candidate Name: Haydon Sloper

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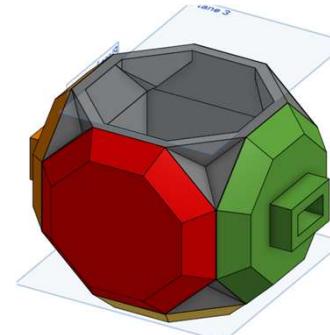
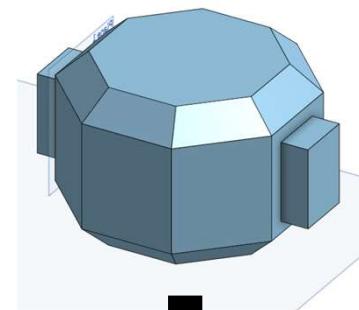
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3D models and CAD

Course work based

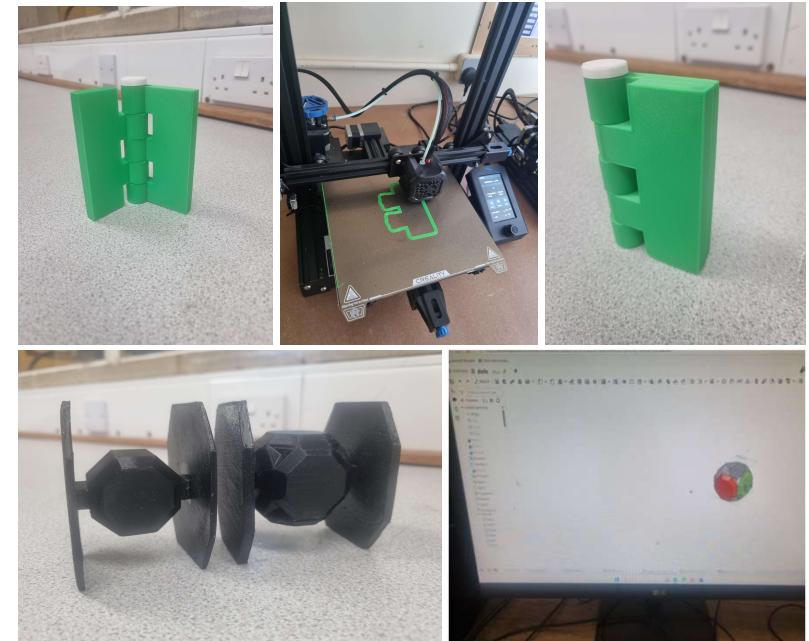
YEAR 12 COURSEWORK

Year 12 was my first time being introduced to CAD/3D modelling so, my level of CAD designing in Yr 12 was limited and it shows in the scale, measurements and quality of 3D model produced. I used this year to get familiar with the system and method of going from a CAD design to printing.



Personal projects

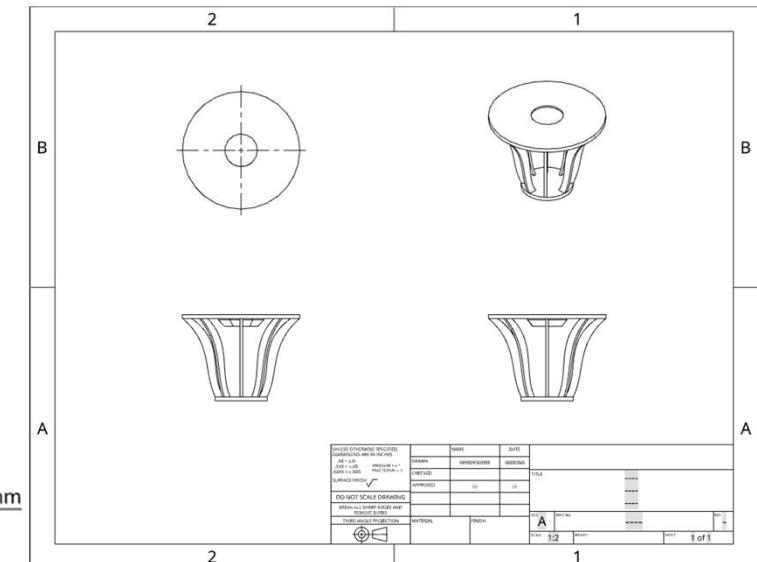
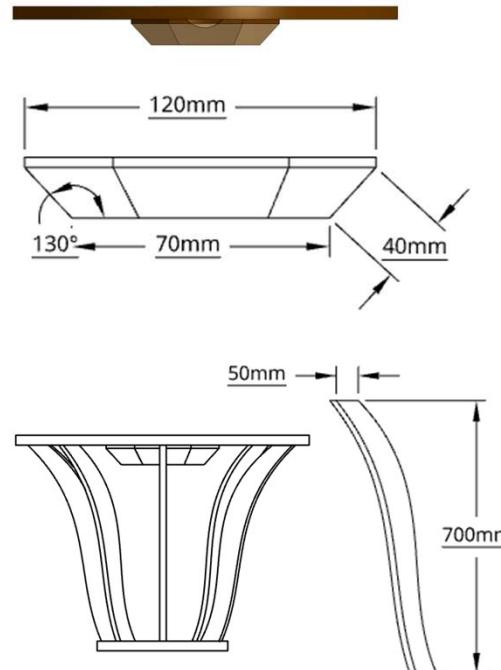
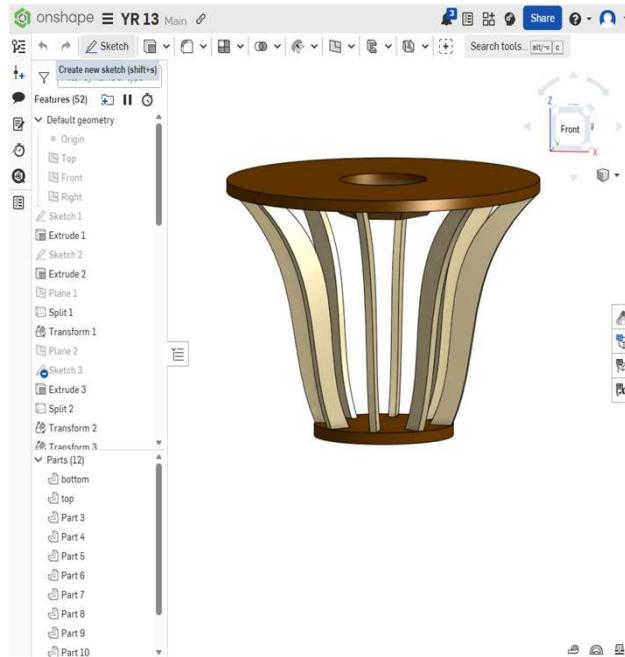
Gold DofE Skills



For my DofE skills I learnt how to better operate the CAD software Onshape. I learnt how to make working parts as well as hollow and more complex shapes. I had a better understanding of it and then implemented it my future coursework. Comparing year 12 to 13 shows a significant improvement in features and it also allowed me to innovate my ideas into improving the joints and overall quality

3D models and CAD

Course work based YEAR 13 COURSEWORK

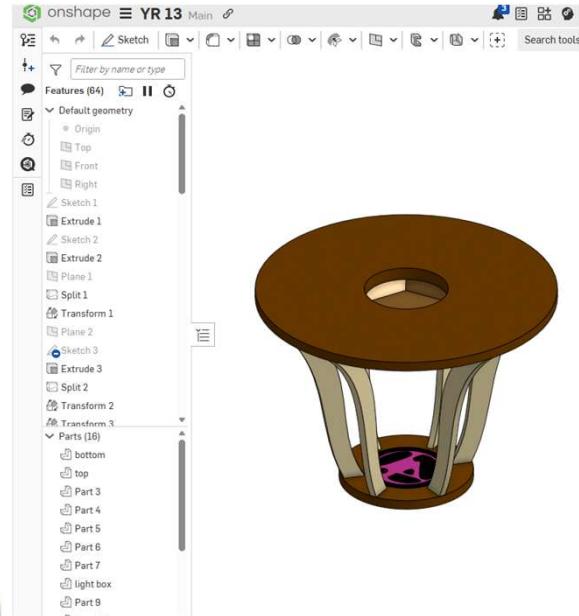


Since improving on my ability to use CAD, my year 13 quality has significantly improved. It has not only become easier to create models but to innovate them and make small changes rather than recreating them.

The drawing feature on OnShape allows me to visualise the design in sketch form as well as the 3D form

3D models and CAD

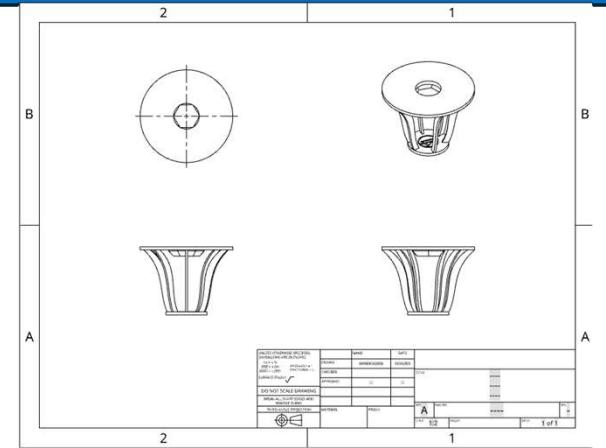
Course work based YEAR 13 COURSEWORK



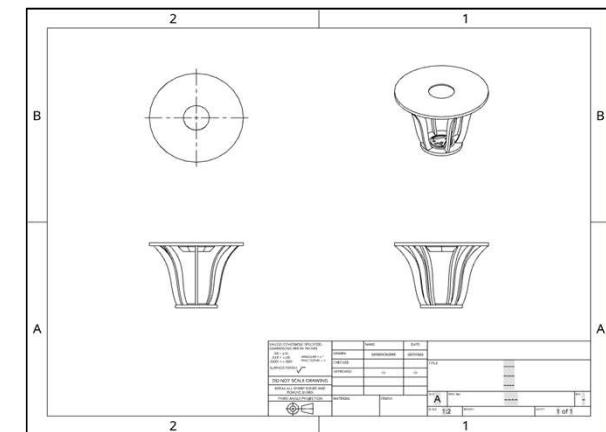
My knowledge of 3D printing has gotten better as I'm now aware of how supports and adhesives are necessary for printed products to be successful.

This has come through many fails as successes to achieve this level of knowledge

On the left is a prototype to what my year 13 coursework will look like, and it is at a 1:116 scale

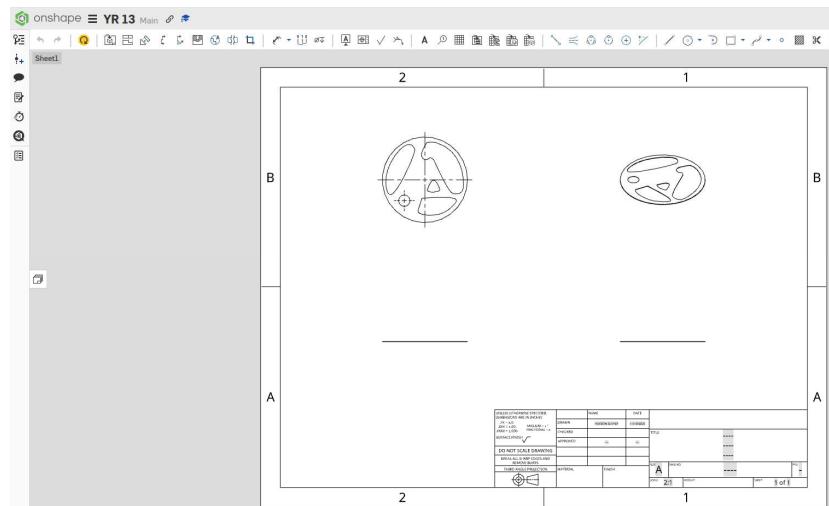


Using OnShape has benefitted my coursework as it has allowed me to create small innovations to the product.



Laser cutting

Practicing laser cutting has helped me improve my ability and understanding of CAD/CAM



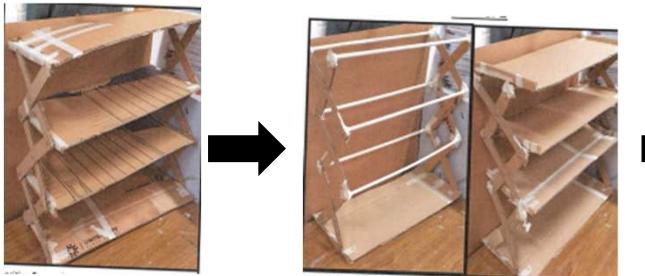
Laser cutting is a highly accurate method of cutting/engraving materials, and it is also very quick and efficient



The laser cutter allows me to both save shapes and create replicable pieces which allow for easy comparison and in very quick time as well.



YEAR 11 COURSEWORK



Modelling

In year 11 it was my first time modelling, and the quality of the model shows this. There is no support for any of the parts, hence the lack of stability

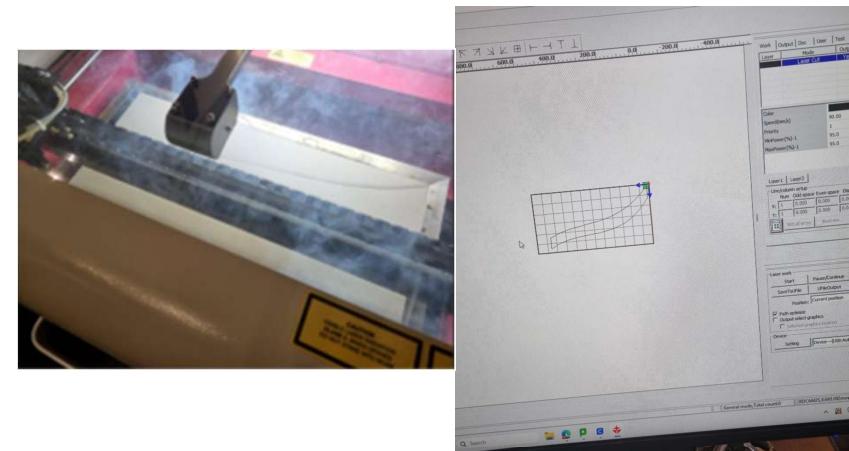
Compare that to year 12, where model looks and was stable, the overall quality of the model had improved, but the accuracy of the parts was not very high

YEAR 12 COURSEWORK

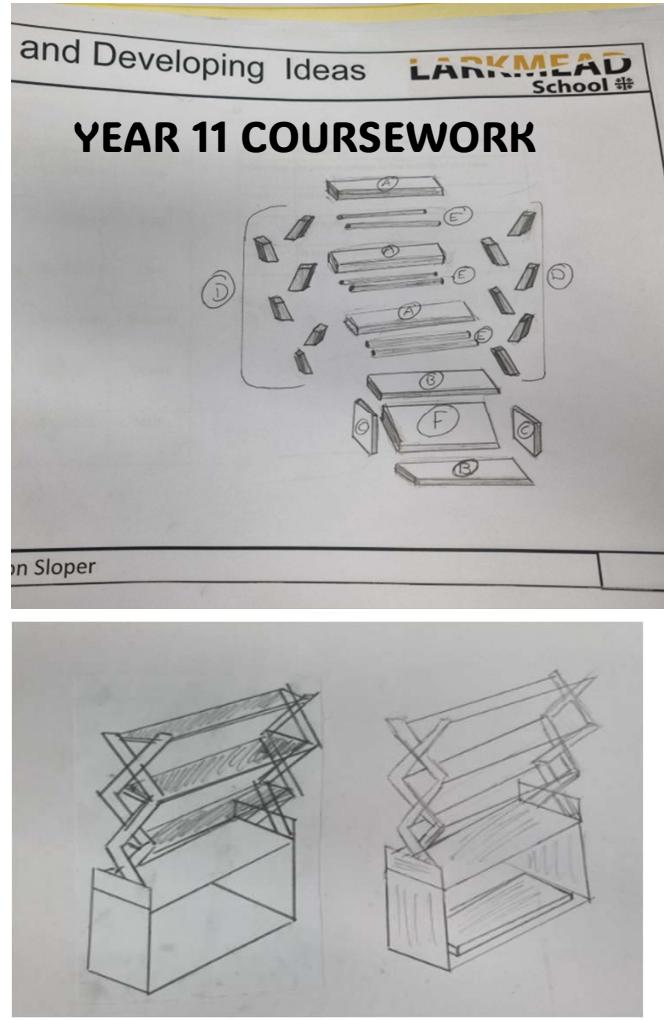


Modelling is a key factor in designing as it allows for me to visualise, to scale, what the product may look like and if it will match the aesthetic of the desired location. I have learnt that modelling is important as its shown through the improvement of quality and precision taken into make the model.

YEAR 13 COURSEWORK



I'm currently in the process of starting modelling for my Year 13 project and I've reflected that my previous two models have not been to the best of quality and accuracy possible. This is why this year I am laser cutting my model, to ensure I have exact measurements and quality.



Exploded drawings and orthographic drawings make it easier to decipher what parts are need to be sourced or made.

The comparison of my year 11 to year 12 exploded and orthographic drawings has significantly improved to the introduction of OnShape. This gives me a better representation of what the product will look like in reality

Product Design - Generating and Developing Design Ideas

LARKMEAD School

YEAR 12 COURSEWORK

Candidate Name: Haydon Sloper

Product Design - Generating and Developing Design Ideas

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Orthographic drawings

Third angle projection orthographic drawing

SCALING	1:1
SHEET	1 OF 1
ALL MEASUREMENTS ARE IN MM	
Product name: Haydon's circle table	

Size A3

Candidate Name: Haydon Sloper

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Manufacturing the Prototype



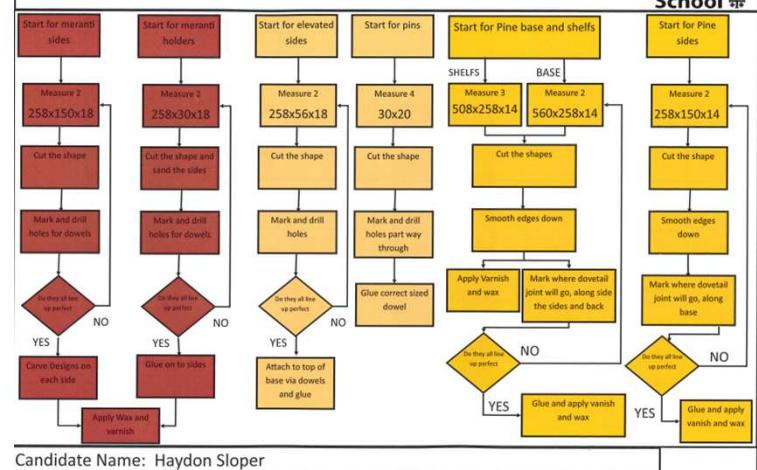
	1	2	3	4	5	6	7	8	9	10	11	12
Researching Tasks												
Creating ideas												
Producing final design												
Creating Templates												
Cutting Pine base/shelves												
Cutting Meranti holders												
Laser cutting												
Drilling 10mm holes												
Sand parts smooth												
Test parts all fit												
Glue all parts together												
Apply Sealant and wax												
Reviewing Product												
Evaluation												

Time management is a key element in product design.

When moving from GCSE to A level the time pressure on creating the product increased, this made time management key to making sure I completed the project on time.

Better planning my time of making the product definitely helped me stay within the time frame

Manufacturing the Prototype



Flowcharts help show the necessary steps I need to follow to successfully make the product. Comparing year 11 to year 12 shows that not only my knowledge of them has improved but the detail of them has improved.

Product Design - Generating and Developing Design Ideas

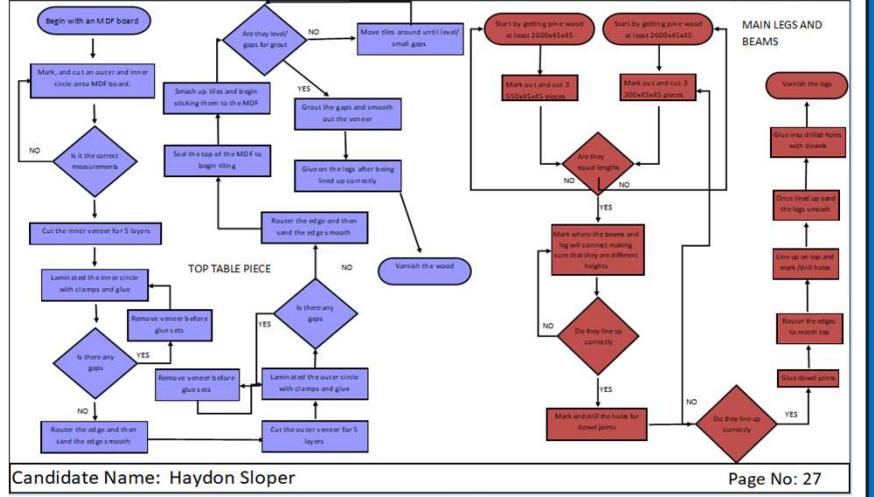


Time allocation for the table top	1	2	3	4	5	6	7	8	Time allocation for the legs	1	2	3	4	5	6	7	8	Time allocation for the beam	1	2	3	4	5	6	7	8
Measuring and cutting the chunk of MDF for the basic									Measuring and cutting basic shape for legs X3									Measure and cut basic shape for the beams X3								
Cut out the circle shape and inner circle of the MDF									Measuring the angle for the legs to be sloped at									Cutting and sanding the beams to slope at								
Prepare and begin laminating the inner/outer edges									Cutting and sanding the legs to angle X3									Measuring angle for beams to slope at								
Cut the excess material off and round the inner edge to slope it									First mark up where the beams will attach (different for all 3)									Measuring difference of where the beams will be attached on the legs								
Leave a 1mm gap on the curve while main laminating									Line up and measure where the legs will attach to the top									Mark drill holes and use brace piece to drill								
Apply MDF's sealant to the wood									Mark drill holes and drill them with 9mm piece									Sand the beams smooth								
Smash tiles to random shapes to create a mosaic									Put the tile on the table top and hold it on one side of the legs									Glue the beams to the legs via dove joint								
Use white resin sealant to attach tiles to the MDF									Sand the legs smooth and glue them to the top and beams									Line up the beams with the legs and mark a hole for to drill								
Once attached sand down any excess tile changing over if needed									Apply As a finish to the legs glue a rubber on the feet									Drill the hole and do will join the 3 legs together with glue								
Glue all parts together									Glue the tiles									Send and smooth any tiles up								

Candidate Name: Haydon Sloper

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Product Design - Generating and Developing Design Ideas



Evaluation and Analysis			
Desirable		LARKMEAD School	
A	My product could have rubber feet, this would prevent the table moving easily.	7/10	My product does have feet but it is made out of plastic so it is water resistant which is good for outside environments.
C	My product could effect the user's client, this is because if the user isn't looking for their tools they can get the job	8/10	My product will do the exact same and maybe even more efficient
S	My product could also have smoothed corners to reduce impact	10/10	My products corners are all smoothed to prevent injury
M	My product could have a pine wood edge to make the product more appealing to the user.	2/10	Due to the change in my product the sides have been made into meranti to provide a nice contrasting colour.
Original Design brief		My Opinion	Client feedback
<p>My aim is to design and make a foldable table. The table will be used to hold the legs and end caps of the metal surface. It needs to be stored in a compact way and needs to be taking portable, this leads to me also having a more efficient way of storing them equipment. The user of this table is Graham Skipper, who is a carpenter. My client has asked me to produce a product that is going to be used in a wet environment. This means the product will need to be made out of water resistant wood such as oak. Oak is also a harder material, this benefits Graham as he can then use all his tools without the worry of it collapsing. The product needs to also be large enough to store all the equipment. The overall dimensions are 3320 mm in width, 790mm in height and 600mm in depth. This means there is enough depth for a tool box to fit in. It is a large enough table to store more space. The dimensions also mean he has more space to access debris acquired from the job of storing it. It can be disposed of correctly. The cost limitation to this product it can be to expensive otherwise Graham will not buy it. This means you need to be careful when creating the product as if I were to make a wooden it could minimise the profit I get, as I will have to purchase new material and it will cost me more.</p>		<p>The design of my product has changed to a dismantlable shelving unit. The product no longer folds but can be taken apart and remade. And this product can be stored in a compact way and it is a portable storage unit. It is better than it was as it is an efficient way of storing the equipment. The main reason for this change is from my client I have made the product water resistant and is made mostly of oak. However there is some meranti wood that has been added but as it is in a hard wood it is water resistant. The product has been shrunk to 567mm in width, 260mm in depth and 705mm when put together. Although the product hasn't got a big surface area it has 4 storage areas for Graham's tools. The cost limitations have stayed the same, however, as the product didn't take as long to make as predicted price of the product has been reduced. This leads to less profit.</p>	<p>My clients, Graham Skipper, was very pleased with my product. He was impressed by the precision and accuracy used to create the product and he enjoyed the fact that it had a modern design on the sides. He quoted, "This looks like some of my old kids I never made,". He has tested the product out and said he felt more productive.</p>
Summary			
<p>Overall, my product has mostly met my desirable needs. However as the design changed drastically the pine edge, which was important to the design, wouldn't work on the new design. The pine used might not have been rubber but plastic works better across both environments wet or dry and prevents scratches to any surfaces, meaning it benefitted the make of my product.</p> <p>In my design brief the main idea was around a table. After realising that the product would take to long, I immediately changed it to a quicker make. I believe this was the right choice as my product has more space to hold tools which benefits my client.</p>			

Evaluating is a key part in the design process as it can show you what elements may need too and what you could improve.

The step up to A level has shown an improvement in my ability to evaluate and compare the specifications of before after the products creation

Product Design - Analysing and Evaluating Design Decisions & Prototypes

LARKMEAD School #

Essential criteria

Criteria	Evaluation
Aesthetic	9.5
Ergonomic	9.5
Environmental	7.5
Functional	6.5

Evaluation of essential criteria - 72/90 [80%]

From this look at the above graph, show that the majority of the criteria have been met. The two perfectly matching are the aesthetic and ergonomic. The environmental was to within 1 point of being at the top of the graph. The functional was the one that had difficulty and meant the most work was left. The ergonomics table was the one that had the least work to do in a ranking of where my client was sitting in their chair and not having any strains. The table was so well designed it fit this criteria as my original vision were. This is why my criteria was so well compared to the ergonomics. My initial vision was to make a table that was very simple and functional. The ergonomics and the table is very close the original criteria. It basically matches the criteria that I originally put. The ergonomics table has definitely met the criteria that has an 80% accuracy based on the score I have given. I think my original criteria may have been unsuitable because I was unaware of how some process worked and what it would look like on my final product. This is a reason the accuracy isn't 100%. The worst criteria is therefor essential. This is because of my poor initial information. The ergonomics criteria is very important to me as it is the main function of the table. I am not sure if it is necessary so that must be accounted for in the final percentage. The main category holding the scoreback is therefor. This is because the functionality of the table being able to have an adjustable height. If this was properly accounted for then the score would have been much higher.

Essential criteria

Criteria	Value
Aesthetic	85
Ergonomic	95
Environmental	75
Functional	65

Essential Criteria

Criteria	Percentage
Aesthetic	~30%
Ergonomic	~35%
Environmental	~20%
Functional	~15%

Evaluation of desirable criteria - 23/40 (57.5%)

Looking at the graph below show that the majority of the original desirable criteria have been met. The aesthetic and ergonomic criteria have made the legs adjustable. This is the most criteria that has been met. The functional criteria is the one that has been met the least. This is because the functionality of the product as it could be changed to a height that suited any consumer. However this was possible as the legs are made from wood, so it meant the structural support would not be able to support a large weight change. As well as this, the structural support would not be able to support a large weight change. This would have put strain on the mechanism making the legs adjustable and may have caused it to break very easily. This would have also made it hard to lift or lower the table up when trying to change the height. The aesthetic criteria has been met as the legs are made from wood. The ergonomic criteria has been met as the legs are made from wood. The environmental criteria did not directly implement my project as the colour was to bold and affected the aesthetics of the table. Instead I started the legs which slightly changed the colour of the table but still kept the wooden aesthetic to the table. The function criteria hasn't been met as the legs are made from wood, the legs were connected by a metal frame of another. Metal takes more time to stand out from the rest. The cost criteria is it is possibly going to be more expensive due to labour and extra material costs. My material costs were kept down by using wood which is a natural material and is not too expensive. The labour costs are very high because of the increased time spent. The cost of a hand and lengthy process and has resulted in higher labour costs. The function criteria was to have an adjustable height. The legs are made from wood which is not strong enough to support a large weight. This is why I changed the table to have an open area for an ice bucket to sit in. This improves the functionality of the table as it keeps the client from having to move to get ice, as it is already there.

<h1>Evaluation and Analysis</h1>		
<h2>SUGGESTED IMPROVEMENTS</h2>		
	<p>The first improvement I have taken into consideration is adding separate storage areas in the bottom compartment for the different parts. When storing the parts it would allow more organisation and would be easier for my client to put the product together. Another reason for the change would be to prevent the rubbing of different surfaces in the pine and meranti. This can cause scratches and cause unnecessary damage to the product. I believe that this would be a good addition to my product and if I were to do it again I would include it in the design.</p>	
	<p>The next improvement I have considered is adding a small trapdoor to the base of the product. This would be to prevent losing anything when carrying the product. It would be connected by small magnets rather than latches as they would be less visible and more practical to make. This would impact my client massively as it would prevent him losing things, as this is what the product is designed for. The door would be made of pine wood to match the base and would have the same handle as the sides. This is so it will blend nicely with the base.</p>	
	<p>The final improvement I would consider to make to my product, is adding parts to hold tools such as screwdrivers. This is because they may role off the shelves and that would be bad for my client as he doesn't want to loose tools on a job. The parts would be pined onto the meranti sides and would have different sized holes to hold different sized screwdrivers. It would also be made out of meranti so it blends nicely, however on the picture its in red so it is easily identifiable. I think this is a good idea and will benefit my client</p>	

Product Design - Analysing and Evaluating Design Decisions & Prototypes

LARKMEAD School #

This is also an interpretation of results from my survey, asking for the most important thing from circular. However, this design will be more sturdy than the other design as it would prevent sinking.

Having the legs meet at one point rather than stacked would allow for a more sturdy product.

An adaptation to this design would be to add a shelf in the centre of the product, this would allow an ice bucket to rest easily or be used for storing other items.

Influenced by my survey, the leg have now been changed into a circular shape.

An adaptation of this is adding a brace between the legs to add structural support.

A further adaptation to the design would be adding a shelf to provide extra storage space for the product.

YEAR 11 COURSEWORK



YEAR 12 COURSEWORK



YEAR 13 COURSEWORK Prototype



Personal projects

