Cambridge International AS & A Level Design & Technology 9705

Component 2: Project 2

General comments

The design folder is not always easy to follow, although each criterion for assessment has been addressed. Clearer photographs of the model's detail are required.

Criterion	Comments	Mark
Identification of a need or opportunity leading to a Design Brief [3]	Although both the situation and the user are described, this is somewhat flat and could be enhanced with some type of illustration. The Design Brief states clearly what is required.	2
Analysis of and research into the Design Brief which results in a Specification [7]	The headings for carrying out the analysis are set out clearly, but little use is made of the questionnaire outcomes and much of the content is generic in nature. Many existing products are considered, but these are mainly ironing boards, ignoring the requirement to store laundry. A design synthesis is presented but this is not really in the form of a clear Specification. Much time and space is spent on the consideration of materials, constructions and finishes for no purpose.	4
Generation and appraisal of design ideas [16]	A wide range of possible ideas is presented each being supported by extensive annotation. Although advantages and disadvantages are stated for different aspects of each design, there is no structured evaluation linked to the Specification. It is not obvious which design has been chosen for modelling and further development.	11
Modelling of ideas [14]	Detailed evidence of the model in its final form is quite difficult to see from the photographs provided, but it appears to be a final product produced in resistant materials rather than a development model.	10
Total [40]		27

Name –

Centre number –

Candidate number –

Project – Storage ironing board

Year – 2019

Design Situation

Design Situation

My name is and I live in in at house number . I learn at where I am a boarder throughout the whole schooling year. At home I live with my single mother, the maid and my 4 siblings .All together we are 7 in my family .During the holidays when I go home the maid always ends up with a lot of laundry and ironing to do, she will have to wash my: clothes, my shoes and my uniforms, on top of all that she also has to wash my families laundry as well. Sometimes, on very rare occasions my siblings and I end up doing the laundry and ironing when the maid is not around but this is very rare. On one of the days when we were doing the laundry during the holiday I realised that there was nowhere to store clean laundry which had been taken from the washing lines. This was because the laundry baskets my mother had bought a few weeks ago were not durable and had already been broken. This lack of durability later affected my whole family because it lead to clean laundry getting dirty because it was either placed on someone's bed or on the floor. This surely affected the maid because she ended up having to wash twice as many clothes which lead to her getting swollen hands which affected her budget because she constantly had to go to the hospital. This lack of durability also affected my mother. One day during the holiday my mother tripped over a pile of clothes and bruised her leg. The situation got even worse when I realised that there was no ironing board too. The maid is currently using my older brothers study table to iron the clothes because the old ironing board was broken by my youngest brother. This affects my older brothers studying because he can no longer study when he wants to because his table is in use. To solve this problem I asked my mother to buy a unit which can work both as a laundry basket and an ironing board but at the current moment due to the economic situation in she cannot afford to. I also asked my uncle in for help but he also cannot afford to. There is a need to make a device that works both as an ironing board and as a laundry basket.

Design Brief

Design brief

I am going to design and make a device that will be able to store clean and dirty laundry and will also work as an ironing board too. This device will be used by my family and any other family facing a similar problem.

Design Analysis

Design analysis

Client

- Who is going to buy the Ironing Cabinet?
- How old will the users be?
- Who is the client?
- How tall will the client be?

Manufacture

- How will the product be manufactured: mass production or unit production?
- How long will the laundry ironing cabinet take to manufacture in the workshop?
- What equipment and machinery will I need for manufacturing the laundry ironing cabinet?
- What are the expected costs of manufacturing the ironing cabinet?
- What environment will it be used in?

Cost

- What will be the budget for the ironing cabinet?
- Will the ironing cabinet be cheap or expensive when it's being sold in stores?
- Will the ironing cabinet be cheap or expensive to maintain

Safety

- Will the ironing cabinet be safe for the client or user?
- What safety precautions can be taken to make the ironing cabinet safe for the customer?

Size

- What will be the overall size (length width and height) of the ironing cabinet?
- What is the length and width needed to perfectly iron clothes?

Function

- What are the functions of the ironing cabinet?
- Will it do what my client/customers want?

Ergonomics

- What ergonomic factors need to be taken into account?
- How will ergonomics influence my designs

Materials

- Where can I collect research material to help me design?
- What materials are available?
- What will be the best material to make the ironing cabinet?
- Will I use recycled materials?
- Which type of fabric will I use for the ironing board?
- What environment will it be used it?
- How will it be maintained?

Aesthetics

- What colour scheme will I use on the ironing board?
- What will be the general shape of the ironing cabinet?
- What special features will be built into the design?
- What possible finishes can be used on the laundry ironing cabinet?

Existing solutions

- What designs already exist and could they be improved

Questionnaire

Questionnaire on what customers are looking for in a laundry cabinet

Questionnaires

On top of the research I also did a few questionnaires to get more information on ironing boards

Name-Magwenzi Gavin

Age-17

Height-1.78m

Q1 -Are you allowed to iron at your house?

A -Yes I am

Q2 -What is your ironing board made out of?

A -It is made out of ply wood and aluminium

Q3 - What do you like most about your ironing board?

A -It is durable and portable

Q4 -What do you hate most about it?

A -It is big and heavy

Q5 -If you could change something on your ironing board what would it be?

A -I would make it smaller

Q6 -How is your ironing board maintained?

A -It is covered when ironing

Q7 -Is it durable?

A -Yes it is because it is well maintained

Questionnaires

Name-Tadiwa Takaendisa

Age-16yrs

Height-1.7m

Q1 -Are you allowed to iron at your house?

A -Yes I am

Q2 -What is your ironing board made out of?

A -Mahogany wood and iron

Q3 - What do you like most about your ironing board?

A -It is lifted above the ground

Q4 -What do you hate most about it?

A -It does not have adequate space to iron clothes

Q5 -If you could change something on your ironing board what would it be?

A - The size of the board, it has inadequate ironing space

Q6 -How is your ironing board maintained?

A -It is folded and stored when not in use

Q7 -Is it durable?

A -It is not, the wood often chips off and it needs to be replaced periodically

Questionnaires

Name-Mrs Njerekai

Age-50 years old

Height-1.75m

Q1-Are you allowed to iron at your house?

A-Yes I am.

Q2-What is your ironing board made out of?

A-It is made out of iron legs and a wooden base.

Q3- What do you like most about your ironing board?

A-It has an extended iron holder at the back where I can place the iron when ironing.

Q4-What do hate you most about it?

A-The grooves are not strong enough and at times the legs just come off and the board will be flattened.

Q5-If you could change something on your ironing board what would it be?

A-Its height, the legs are too short for me to iron properly

Q6-How is your ironing board maintained?

A-After use it is folded and it stands on the wall

Q7-Is it durable?

A-it is not, the legs easily break

Questionnaires

Name-Patience Takayendesa

Age- N/A

Height-1,54

Q1-Are you allowed to iron at your house?

A-Yes

Q2-What is your ironing board made out of?

A-Wood and aluminium

Q3- What do you like most about your ironing board?

A-The surface area is big so there is easy ironing

Q4-What do you hate most about it?

A-It is not stable when ironing

Q5-If you could change something on your ironing board what would it be?

A-The top cover on the ironing board does not seem durable

Q6-How is your ironing board maintained?

A-The top board is cleaned as well as the ironing

Q7-Is it durable?

A-Its fairly durable

Questionnaires

Name-Bob Delphine

Age-13

Height-1.4m

Q1-Are you allowed to iron at your house?

A-Yes I am

Q2-What is your ironing board made out of?

A-Plastic

Q3- What do you like most about your ironing board?

A-It is easy to use and it has an adjustable height

Q4-What do you hate most about it?

A-It is weak and unstable

Q5-If you could change something on your ironing board what would it be?

A-The material it was made with

Q6-How is your ironing board maintained?

A-It is cleaned and packed away after use

Q7-Is it durable?

A-It is not durable because it was made from weak material

Research into material

Research into material

Ferrous Metals

Name & Picture	Properties & uses	My comment in relation to my project
Aluminium	Light, soft, ductile, malleable, can be welded, good conductor of heat and electricity, corrosion-resistant, polishes well and hard to join.	I might consider using aluminium because it is corrosion resistant due to its protective layer of oxide providing high durability levels for the product. It will be easy to clean which leads to good hygiene towards my design
Copper	Red, malleable, ductile, tough. Corrosion Resistant. High heat/electrical conductor, polishes well, easily joined and expensive to buy.	I might consider using copper because cooper is malleable and ductile making it good for bending into different types of shapes and can be stretched elastically. It also has an attractive look and very durable due to its tough exterior and properties
Brass	Very corrosion resistant, hard, casts well and good heat and electrical conductor, polishes well and easily joined.	I might consider using brass because it's an extremely strong and hard wearing material which will not become scratched or damaged easily. It has an attractive finish and is fairly easy to clean which leads to good hygiene levels for my laundry ironing cabinet. Tin
Tin	Soft, weak, ductile, malleable and corrosion resistant. I	I might consider using tin because it is durable, corrosion resistant as It has a protective coat meaning it does not react with air and will not rust. These properties are ideal for my laundry ironing cabinet increasing its durability levels
Lead	Soft, malleable, corrosion resistant and immune to many chemicals.	I might consider using lead because it has a bright and shiny finish also, because of its ability of being immune to chemicals (inert) meaning my design will last longer due to the high durability levels provided by lead.
Zinc	Bluish-white, Ductile, has a layer of oxide protects it from further corrosion	I might consider using zinc because it has an attractive finish meaning it will give my product a nice rustic look. It is also highly durable because of its protective layer of oxide which protects from rusting, meaning my product will last longer than expected

Ferrous Metals

Name & picture	Properties & uses	My comment in relation to my project
Mild steel	Tough, ductile, malleable, low tensile strength, poor resistance to corrosion, easily joined.	I might consider not using mild steel because mild steel has a poor resistance to corrosion meaning my product won't last as long as I would want it to
Cast iron	Hard skin, softer underneath, but brittle, corrodes by rusting	I might consider not using cast iron because it is brittle meaning it is easily broken, of which it can reduce my product's life expectance as well as its strength levels.
High carbon steel	Very Hard but less ductile, tough and malleable.	I might consider using high carbon steel because its tough properties meaning it can with stand any shocks, for this will provide my product with high durability levels as well as strength.
Stainless steel	Retains hardness at high temperatures. Brittle. Hard and tough, resists wear, corrosion resistant, difficult to cut and file.	I might consider not using high speed steel because it is brittle meaning it is easily broken of which it can reduce my product's life expectance and strength levels.
High speed steel	Extreme toughness and abrasion resistant	I might consider not using high speed steel because it is brittle meaning it is easily broken of which it can reduce my product's life expectance and strength level
Manganese steel	Extreme toughness and abrasion resistant	I might consider using manganese because it is abrasion resistance meaning my product will not be able to be scraped or wear away easily making my product last for a longer period

Hardwoods

Name & picture	Properties & uses	My comment in relation to my project
Beech	Hard, tough, very strong and straight.	I might consider using beech wood because it is wear-resistance and shiny when dry with no distortion. It also has excellent durability levels providing my product with a longer lasting time frame.
European oak	It's very strong, very durable, hard and little shrinkage.	I might consider using oak because Oak is very durable, and it will not be as prone to water damage or corrosion as some other types of wood. Also Oak wood has great strength and hardness; It is very resistant to insect and fungal attack.
Mahogany	Pink to reddish-brown colour, fairly strong, durable, some interlocking grain.	I might consider using Mahogany because Mahogany has a generally straight grain and is usually free of voids and pockets. It has excellent workability, and is very durable. Mahogany also resists wood rot which will make our product even last longer.
Teak	Hard, tough, naturally durable and highly resistant to moisture, fire, acids and alkaline	I might consider using teak because its weather-proof, It endures well during all-weather from summer to winter. It has excellent durability levels which will make our product last for a longer period. Finally it has an attractive finish which is natural.

Softwoods

Name & picture	Properties & uses	My comment in Relation with my project
Scots pines	A straight-grained softwood but knotty. Light in colour. Fairly strong but easy to work with. Cheap and readily available.	I might consider using scots pine because it is durable which will make my product last for a longer time period. Also because it is easy to work with and finishes well, this will provide an attractive look onto my ironing cabinet.
Parana pine	Hard and straight-grained. Almost knot free. Fairly strong and durable. Expensive. Pale yellow in colour with red/brown streaks.	I might not use Parana pine because it lacks toughness even though it contains hardness and high durability levels. Also it does tend to warp and that's not a good property on wood
Spruce	Creamy-white softwood with small hard knots. Not durable	I might not use spruce because I want my product to last for a long time but spruce cannot provide those properties.
Yellow cedar	Pale yellow-coloured softwood with a fine even texture. Light in weight but stiff and stable.	I might consider using yellow cedar because it's Resistant to insect attack because of natural preservative oils. Weather and dry rot. Knot free. Very durable even though it's not that strong and it's very easy to work with
European redwood	Quite strong, Lots of knots, durable when preserved. cheap	I might consider using redwood because it is durable which will make my product last longer. Also because it's easy to work with and finishes well, this will provide an attractive look onto my laundry ironing board product.
Elm	Light to medium brown in colour, open and sometimes interlocking grain, tough, durable, resists splitting, durable in water.	I might consider using Elm wood because elm wood is tough, strong corrosion resistance and high mechanical strength with excellent durability levels. It is suitable for carving.

Manmade Board

Name & picture	Properties & uses	My comment in relation with my project
MDF	Smooth, even surface. Easily machined and painted or stained. Also available in water and fire resistant forms. A manufactured board.	I might not use MDF because MDF will soak up water and other liquids like a sponge and swell. Also Because it consists of such fine particles, MDF doesn't hold screws very well.
Plywood	A very strong board which is constructed of layers of veneer or piles which are glued at 90 degrees to each other. Interior and exterior grades are available. A manufactured board	I might consider using plywood because of its freedom from shrinking, swelling and warping. It also has High uniform strength
Chipboard	Made from chips of wood glued together. Usually veneered or covered in plastic laminate. A manufactured board.	I might not use chipboard because chipboard is prone to cracking and splintering particularly if you are driving screws or nails into its surface. Chipboard does not cut well. Finally chipboard hoards any moisture it comes in contact with and retains it like a sponge.
Hardboard	A very cheap particle board which sometimes has a laminated plastic surface. A manufactured board	I might consider using hardboard because Hardboard provides excellent resistance to termites and other bugs. Hardboard is quite sturdy and durable.
Block board	Similar to plywood but the central layer is made from strips of timber. Good for shelves and worktops. A manufactured board	I might use block board because of its main property which is to avoid warping. This to my product is an advantage because it allows me to use nails and screws' meaning it is durable

Research into hinges

Name & picture	Properties & uses	
Butt hinge	A butt hinge is used to mount and operate doors on commercial properties and residential homes. It consists of two rectangular leaves with connected by a steel pin with screw holes.	I might not consider using hinges because its main disadvantage is that the screws are close together and in a straight line, due to this there is a risk of splitting the wood.
Piano hinge	Consists of two connected metal plates that extent along the entire length of the whole door.	I might use a piano hinge because they are of full height; they spread the force and tension applied along the entire hinge, which allows it to last much longer than a butt hinge
Tee hinge	Consists of a wide triangular part for the door and a thin narrow and rectangular part for the frame in the shape of a tee.	I might use a tee hinge because they give good strength and support to the door and are fairly easy to attach but gives little security because the fixing screws are exposed
Concealed hinge	Used to hinge cupboards or other furniture doors so that they are not externally visible.	I might consider using a concealed hinged because it works very well with manufactured boards even though the process is complicated.
Flush hinge	Light weight hinge where one flap fits into the other when closed. Designed to fit within a pocket cut into the door and frame.	I might consider using a flush hinge because it eliminates any gaps between the door and the frame meaning it will be creating a seamless, clean look which is preferable for my ironing cabinet.
Barrel hinge	Consists of two parts and the first has a thread section which screws into the second section that contains a pre-drilled hole	I might consider using a barrel hinge because the hinge allows for a larger swinging action meaning it is suitable for areas such as two way swinging doors providing durability and an attractive look upon my ironing cabinet.

Research into nails

Picture & name	Properties & uses	My comment in relation to my project
Round wire nail	Used for rough carpentry where appearance is not important but strength is essential.	I might consider using round wire nails because they are available in various length/sizes.
Panel pin	Used with small scale work and pinning thin sheet material.	I might consider using panel pins because its head can be driven below the surface with a nail punch which will provide my product with an attractive clean surface.
Hardboard pin	Used with small scale work and pinning thin sheet material.	I might consider using hardboard nails because its pointed head does not need punching below the surface, its already attractive the way it is.
Staple	Used to make packing crates and in upholstery work.	I might consider using staples because they are easily nailed in using a staple gun, reducing my production time and labour.
Masonry nail	Used to fasten into brickwork or mortar.	I might consider not using masonry nails because my laundry ironing cabinet will not be wall mounted, therefore it is irrelevant.
Corrugated fastener	Used to make quick cheap corner joints in wooden frames.	I might consider using corrugated fasteners because corrugated fasteners are simply applied, effective and economical.

Research into wood screws

Name & picture	Properties & uses	My comment in relation to my project
Coach	Used where great holding power is required.	I might consider using a coach screw because its treads provide great holding strength, increasing my product's durability levels.
Twin fast	Used on chipboard because the coarse thread provides greater holding power.	I might consider using a twin fast screw because it has great holding strength, providing my project with high durability levels.
Raised head	Used for decorative purposes.	I might consider using a raised head screw for screwing in my fittings onto the wood because they are made out of chrome plated brass to look attractive or plated to match fittings, making my product more appealing to the human eye.
Round head	Used to fasten thin sheet materials such as metal or plastic to wood.	I might consider using a round head screw because its head needs not to flush and can resist rusting because it is made out of black japanned steel which is apparently corrosion resistant.
Counter head	Used when you want the head of the screw to be level with or slightly below surface.	I might consider using a counter sunk head screw because its unique head allows it to be inserted below the timber's surface and it is covered with dowels to create an attractive feature.

Research into joining methods for metal

Name & picture	Properties & uses	My comment in relation to my project
Nut and Bolt	These are used for holding two components together between head and nut. They are used for temporarily fixing of metals.	I would not consider using nuts and bolts because my design needs to have strong joints that are permanent.
Pop rivet	These are used for joining thin sheet metals when one side of the join is inaccessible and for joining aluminium sheets because of difficulties with welding.	I might use pop rivet because my design needs to have strong joints that are permanent.
Soft soldering	It is used as the filler material in a soldered joint by varying the relative proportions of the two alloying metals. Soft soldering is essentially an alloy of lead and tin.	I might consider using soft soldering because it creates a secure strong bond which is good for my product because it will increase the durability levels.
Arc welding	Used for high strength joints using a filler rod of similar material to the materials being joined.	I might consider using arc welding because it has great strength meaning my product will last longer also because of its permanency.
Soft soldering	It is used as the filler material in a soldered joint by varying the relative proportions of the two alloying metals. Soft soldering is essentially an alloy of lead and tin.	I might consider using soft soldering because it creates a secure strong bond which is good for my product because it will increase the durability levels.
Arc welding	Used for high strength joints using a filler rod of similar material to the materials being joined.	I might consider using arc welding because it has great strength meaning my product will last longer also because of its permanency.
Silver soldering	Used for low temperature joining of metals, using an alloy of silver, copper and zinc.	I might consider silver soldering because it is very strong even though it uses low temperature meaning my product's life expectance will be longer. Also because the low temperature makes it suitable for also joining many non-ferrous metals.

Research in adhesives

Name & picture	Properties & uses	My comment in relation to my project
PVA	Its water resistance. It has a reasonably long shelf life with high bond strength.	I might consider using PVA gluing because it is non- staining, strong if the joints fit well and water resistant which can provide moderate durability levels. Also because It has unlimited shelf life and permanently joint in 2 hours.
Araldite	It is waterproof, it has good strength (durable) at the same time produces bad fumes. It's also expensive.	I might use Araldite because it is good gap filler and is also good at bonding end grain. Also because Araldite has very good strength making it eligible for use on any type of material and provides high durability levels for the product.

Scotch glue	Strong and durable	I might use scotch glue because it does not stain wood which will leave my laundry ironing board surface neat. It is very strong providing a longer life expectance to my product. Also because it has high gap filling properties.
Evo-stick impact	It is flammable and produces bad fumes but has high strength.	I might use evo-stick impact because it has great holding strength and doesn't require clamps to hold the timber together because there is no drying time and once contact is made the bond is permanent.
Casein glue	Its waterproof, heat and water resistant. Also durable.	I might use casein because it is waterproof and heat resistant which will make the product's life expectance longer. Also because it's very strong this will provide high durability levels.
Aerolite	High strength and durable. It is also water and heat resistance plus waterproof.	I might use aerolite because it makes a very strong, almost colourless and waterproof joint which sets in 3 hours. Also because it will fill small gaps in the joint and have a long shelf life.
Polyurethane glue	It's strong, durable and waterproof. It can be painted and is also flexible.	I might use polyurethane because it slightly expands a little when it dries; it is good for woodwork projects or for using in woodwork joints. Also because it has excellent sealing properties so it can be used to level, seal and fill gaps and holes better than most adhesives.

Research into wood joints

Name & picture	Properties & uses	My comment in relation to my project
Butt joint	Used in basic wood work projects	I would not consider using a butt joint because it's so weak and not very aesthetically pleasing, also because my design needs to have strong joints for high durability levels.
Mortise and tenon joint	Consists of a tongue that is secured into a slot and it is used in areas such as table legs.	I might consider using a mortise and Tenon joint because my product needs a strong, durable and aesthetically pleasing joint like this one, also because of its ability to support a large amount of weight meaning the laundry ironing board's life expectance will be increased.
Dowel joint	Used in woodwork joinery like chairs, cabinets, panels and table tops. They are also used to assist with alignment during glue up.	I might consider using a dowel joint because my product would be suitable with such a joint because it is strong and attractive also, because a dowel joint is very useful or greatly increases the strength of weakened woodwork joints such as butt joints.
Dovetail joint	Used in fine woodwork joinery including furniture, cabinets, carcase construction, log buildings and traditional timber framing.	I might consider using a dovetail joint because it is durable. The joint gives great strength and aesthetics but requires good precision and accuracy during the construction.
Through housing joint	The joint is often used affix shelves to bookcases carcase, also used at the back of drawers.	I might consider using a though housing joint on my laundry ironing cabinet because it is strong and withstands stress from many directions.
Comb or finger joint	They are often used for machine made joints.	I might consider using a finger or comb joint on my laundry ironing cabinet due to its high strength level because of the large gluing area meaning it is durable and it's simple to make because there are no dovetail angles.
Lap dovetail joint	Used where the joint must not show on one surface such as for the front corner joints of drawers, and the tops of cabinets where a	I might consider using a lap dovetail joint because it is durable also, because I like its smooth finish of which it hides end grain giving it a nice elegant look.

	smooth surface with no end grain is important.	
Cross halving joint	Are used for joining two rails which cross without cutting right though either piece.	I might consider using this joint on the laundry ironing cabinet because this joint is very useful for supporting or increasing the strength of two pieces of timber instead of just nailing or screwing them together.
Mitre joint	Used to attach or cover the edges of wood panelling.	I might consider using a mitre on my laundry ironing cabinet because the joint is stronger and more appealing than a butt joint because the ends are cut 45 degree angle and then glued together, this creates better surface area for adhesives to be applied while also concealing the end grain giving my product a nice flush look.

Research into wood joints

Research into finishes on metal

Name & picture	Properties & uses	My comment in relation to my project
Galvanising	Corrosion and tarnish resistant	I might consider galvanizing because it forms a coating of corrosion resistant zinc which prevents corrosive substances from reaching the more delicate part of the metal meaning my product will last longer
Anodizing	Corrosion, wear and tarnish resistant	I might consider anodizing because of its reflectivity and appearance levels, which mean it, will provide my product with a shiny and attractive appearance that is easy to clean. Another reason being it will not wear away easily but increase its wear resistance providing a longer life expectancy upon the laundry ironing cabinet.
Metal plating	Solder able, hardness, wear resistance, electrical conductivity, torque tolerance	I might consider metal plating because it is durable, it will not be worn away easily, and therefore it will make the product last for a longer time period.
Hot blackening	Used to add mild corrosion resistance, for appearance and minimise light reflection.	I might consider hot blackening because it will provide my product with an attractive but very thin and marginally corrosion resistant, dark black iron oxide finish which blends with any colour scheme in any home.
Powder coating	Hardness and corrosion resistance	I might consider powder coating because it creates a hard finish that is tougher than conventional paint meaning my product will last longer and gain an attractive shiny finish.
Electroplating	Wear resistance, corrosion resistance, hardness and abrasion resistance.	I might consider electroplating because it is abrasion resistance, for my product will not be able to be scraped or wear away simply providing a hard aesthetic surface for my product.
Paint	Used to protect, colour, or provide texture to objects	I might consider using paint because it is glossy therefore it will give the laundry ironing board a shiny and attractive appearance that is exotic, dynamic and definitely different from the rest of the finishes.

Research into wood finishes

Name & picture	Properties & uses	My comment in relation to my project
Shellac	It has a transparent finish and is also waterproof. Durable and compatible with excellent rubbing qualities.	I might consider using shellac because of its outstanding qualities such as strength and durability. Once applied and maintained it will last indefinitely. There is also no fear of cracking because it is so flexible and elastic.
Conversion	It has a transparent,	I might consider using Conversion

Design synthesis

Research into wood Finishes

varnish	hard and glossy finish. It's also durable and waterproof.	Varnish because of its hard and glossy finish which will provide my product with an attractive, excellent hard finish. Its durability levels are high, providing strong protection.
Polyurethane varnish	Contains a clear coating. Gives a substrate a plastic type finish. It is durable	I might consider using polyurethane varnish because it gives a quality and protective finish. Not only does it provide a quality and protective finish It also prevents the wood from cracking and shrinking making the laundry ironing cabinet durable for a long time.
Tung oil	Provides a tough, flexible and highly water and alkali resistant coating. It has a transparent finish.	I might consider using Tung oil because it's flexible. The oil finish continues to protect as the wood expands and it's resistant to alkali, moist and fungi
Wax	Has a nice shine and dull, even sheen unless spit polished.	I might not consider using wax because its protection levels are low which makes it a fairly non-committal finish selection for the laundry ironing cabinet.
Nitrocellulose lacquer	Has a transparent finish. It also contains a hard and glossy finish. It has strong durability levels.	might not use nitrocellulose lacquer as a finish because its protection against solvents, moist and fungi is not effective enough but decent, for this will reduce the durability levels of the produce.

Design synthesis

✓Client

1. Who's going to buy my laundry ironing cabinet?

My laundry ironing cabinet will be bought by various people who are facing the same challenges as my family at home or in the ironing industry. I plan to sell the product at a local furniture store, it sells furniture of various styles to a range of age groups.

2. Which age group is going to use the laundry ironing cabinet?

To determine the age group, I am going to conduct a questionnaire for various age groups for both genders to discover which age groups already know how to use an iron. I will start by trying out the questionnaire on my family. From the results obtained I will derive a conclusion of the advisable age group for the ironing board.

3. Who is my client?

My client is the group of people who were firstly affected by the problem originating from home. The laundry ironing cabinet is not only going to be used by my client but also by those who are also facing the same problem. They will be able to access the ironing cabinet through purchase from a local store in Gweru

✓ Cost

4. What is going to be the maximum budget to make the laundry ironing cabinet?

The maximum cost to make the laundry ironing cabinet will be determine through acquiring various quotations from contacted suppliers and calculate the maximum amount required for the project to proceed. The key thing is that my project should be cheap.

5. Will the laundry ironing cabinet be cheap or expensive for resale in stores?

The laundry ironing cabinet's cost in stores (cheap or expensive) will be determined by the selected quotations. Cheap - will probably be due to the use of the low priced quotations. While expensive is due to the use of the high priced quotations. The quotations vary in price due to the quality of the material as well as different retailers.

✓ Safety

6. What precautions can be taken to make the laundry ironing cabinet safe for the client/customers?

There are multiples ways to make my product (the ironing cabinet) safe such as no sharp corners, filing etc. Through intensive internet research I am to discover more ways to implement on my product to make it safe for the client/customers as well as the environment.

✓ Size

7. What will be the overall size (length, width, and height) of the laundry ironing cabinet?

The length and width of the ironing cabinet is going to be determined through research on existing solutions towards the same situation as mine. Not only am going to use the internet research for my measurements: for the height I plan to collect anthropometric data for the height (restricted to the distance between your waist and feet) of people within my selected group and draw up a conclusion using the data.

8. What is the width and length of the ironing board for the clothes to fit?

For the length and width of the ironing board I am going to collect more anthropometric data by measuring a countless number of clothes to help me conclude on the right measurements. The measurements for length. I am not only going to depend on measuring clothes but I also plan to continue collecting anthropometric data for arm swing from various people with in the selected age group to help me determine the right length.

✓ Manufacture

9. How will the product be manufactured: mass production or unit production?

The ironing cabinet can be manufactured through both production techniques. The production technique to be used will truly be determined by how many ironing cabinets are to be made. As for the client it can be manufactured through unit production, but in preparation for sales in the local store mass production would be the best option.

10.How long will the product take to manufacture in the work shop?

The length of production simply depends on the production technique used to manufacture the laundry ironing cabinet. With unit production as the selected production technique the manufacture process will take long due to certain factors. But, as for mass production the manufacture process time frame is reduced greatly.

11.What equipment and machinery will I need for manufacturing the ironing cabinet?

Within a workshop there are various tools ranging from tools that cut metal, wood and plastics. For my product all I acquired are

tools that are able to cut through heat resistive and durable (strong) materials such as wood and metal to make the product.

12.What are the expected costs of manufacturing the product?

Expected costs of manufacturing the laundry ironing board seem to be limited to simply tool repairs or either replacing the tool itself. The rest of the costs seem to have been covered within the cost for materials and various other necessities.

✓ Material

13.Where can I collect research material to help me design?

I can collect material from various sources ranging from the school library, research from the internet, interviewing my familiy, emailing manufactures and retailers are possibilities even magazines too can be a source of material to help me design or inspiration.

14.What materials are available?

A tone load of material is available ranging from soft wood to hard woods. The variety does not end on wood as there are nonferrous metals and ferrous metals simply waiting to be used, not forgetting fabrics too.

15.What will be the best material to make the product?

There's a lot of material that suites the job on the ironing cabinet. The best material will be material that is heat resistant putting metals and wood in the lead ruling out plastics, as they melt once in contact with heat.

16.Will I use recycled materials?

Recycled materials can be a possibility as it can reduce the budget and to make the laundry ironing cabinet. Not only can recycled materials reduce the budget, they can also help the environment making the final product deemed environmentally friendly.

17.Which type of fabric will I use for the ironing board?

The laundry ironing cabinet requires fabrics that is heat resistant and at the same easily cleanable. Through internet research I will research on fabrics that fall within my category of heat resistant fabrics. And select my desired fabric.

✓ Function

18.What are the functions of the product?

A product that can be used by many for various purposes. Through the design situation and brief I will determine the functions of the ironing cabinet, if more functions are to be added then it shall be done, so that the product solves the problem at home and for those facing the same challenges.

19.Will the laundry ironing cabinet do what my clients/customers want?

Through serious analysis of the design situation, I will assure the laundry ironing cabinet will do what my client/customers want to do. Not only through analysis will I assure the product will do what it is required to do, I plan to work hand in hand with my client to make sure the laundry ironing cabinet does what is required of it.

20. Where will the product be used?

The product can be used in multiple places either at home or industries. At home it can be placed in countless rooms that will be perfect for ironing. As for industries it's a different case, as there are specific places where the product is to be used.

✓ Ergonomics

21. What ergonomic factors need to be taken into account?

Different anthropometric data will be collected to apply various ergonomic factors to the laundry ironing cabinet as described above to make it reliable and superb.

22. How will ergonomics influence my designs?

The anthropometric data collected will affect different features of the laundry ironing cabinet such as the height of the product, length of the ironing board etc., making it suitable for the client/customers.

✓ Aesthetics

23. What colour scheme will I use on the ironing board?

By carrying out a questionnaire I will determine the colour scheme of the laundry ironing cabinet. The questionnaire will contain various colours that are socially acceptable and attract people.

24. What will be the general shape of the laundry ironing board?

There are various shapes that can be used to design the laundry ironing board. Through existing solutions and looking at different shapes for inspiration I will determine the shape of the ironing cabinet.

25. What special features will be built into the design?

Multiple features can be implemented to help the laundry ironing cabinet do a better job description. By viewing existing solutions for inspiration I will be able to determine the type of special features my client/customers require to make their lives easier.

26. What possible finishes can be used on the ironing cabinet?

Different types of finishes can be applied to the ironing cabinet ranging from wood finishes, metal finishes and colour application for the fabric. Through internet research I will determine the suitable metal or wood finish to use on the product, as for the fabric will determine the perfect colour application method to use on the fabric through experimental work in the fashion and textiles workshop.

✓ Existing solutions

27. What designs already exist and can they be improved?

Existing products will be investigated through internet research with a view to improving or redesigning. Research such as this will help me design my ironing cabinet

Existing solutions

From the questionnaire we can tell that the users want the device to be durable which this is not, they want it to be mobile and to have a lot of storage space and this design does not. It does not meet any of my questionnaires needs

Existing solutions

1 This ironing board has a lovely sheik design which is very attractive and tempting. The ironing board has a lot of good qualities but on this ironing board the bad outweighs the good. This design has many flaws, these many flaws are 1 -it is unadjustable, this lack of variety in height greatly disadvantages the people which are vertically challenged and are unable to reach that height. Every great product should be user-friendly and this ironing board is not.

The first disadvantage would greatly affect Patience and Bob, from the questionnaire. The height of the board can't be adjusted so these guys would not be able to use it comfortably

2 - This ironing board is immobile. This ironing board is in 1 place which will eventually inconvenience the user because they will have to go to 1 place to use it.

3 - This ironing board is fairly short so this means it will not be able to fit long clothes which the owner might own. 4 -This ironing board is thin which means it makes ironing large pieces of clothing very hard.

5 -The ironing board also looks quite fragile due to its positioning and support systems which makes it expensive maintain since it will constantly break.

6 - This ironing board has no storage method to store the ironed clothes or to store the iron when no one is using the board. This feature is very important as if it were available ironing will be made very easy.

This device has a height which can not be adjusted and this is a strong ~~draw~~ design flaw as from the questionnaire we notice that the different people have different heights

2 This ironing board has a rather simple and plain design which is good combination in any case. This then makes the ironing board very attractive and elegant which is what every design needs to be. This device has a lot of good qualities but the bad ones are what stand out in particular .1 - This ironing board is thin and short

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In relation to my project

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2 - This ironing board has a mixed or permanent height which is not user friendly because different people have different heights.
3 - This ironing board also has very limited storage space for laundry and ironed clothes
4 - This board is not portable which is very inconvenient for the user because they would have to go to one position just to use it. This ironing board also looks extremely fragile as it is made from wood which makes it very hard to maintain since it will need constant repairs.

3 This ironing board is a designing disaster. 1 - The ironing board is way too short , this is really bad because not everyone in the world is short which makes it not user friendly.
2 - The legs on the ironing board are thin and short which means they are fragile and could easily break, this then shortens the life span of this design which would cost the user because they will constantly have to fix the ironing board.
3 - This ironing board is immobile which means it can only be used in one area which inconveniences the user.
4 - This ironing board does not have adjustable legs which inconveniences the users because non everyone is the same height.
5 - The ironing doesn't fold which means it is not easily portable , this will later inconvenience the user when he wants to transport the ironing board

. 6 - This ironing board has no storage capacity for newly ironed clothes which inconveniences the user after he ironed.
7 - This ironing board is made out of plastic which is material that can easily get burnt.

④

In relation to my project

4 This ironing board has a unique and captivating design which is very lovely and attractive. From the design you can tell that this ironing has a sole purpose of ironing pants and shorts which limits the user . This ironing board has more design flaws than just that of the single purpose it is also unstable , the positioning of the shows its limited stability .
2 - This ironing board has no wheels which make it immobile and this then disadvantages the user because they would have to go to one place to use it.
3 - This ironing board has no place to store ironed clothes which is a disadvantage to the user.
4 - This ironing board doesn't fold which makes it hard to move around with. This inability will later disadvantage the user when moving.
5 - This ironing board is extremely short when considering its length and width, this means the user can only iron short pants and anything longer than the board he will find it hard to iron.

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In relation to my projects

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The device not having a lot of ironing and storage space is a large disadvantage because as we noticed in the questionaire the users are opting for a device with easy accessibility and lots of working space

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The only thing rights with this project is its width and length because it is perfect for ironing. The major problem with this design is it is not adjustable. For people like Hawin and Tashwa, this is a nightmare as it would take them forever to reach the grou

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This ironing board has a lovely design but it has many problems. From the design we can tell that its sole purpose is to iron lower body clothing items but makes no room for the upper body. This is a major character flaw

5

In relation to my project

5 This ironing board is the by far the best I have seen so far. It has most of the required elements to be a great ironing board. It is portable and it has storage capabilities. Even though it has great attributes it also has some bad ones. 1 - It is not adjustable which then makes it hard to use as not everyone is the same height.
2 - The board on which clothes are positioned when ironing is very short in terms of length and width. This shortness means the user will find it hard to iron large pieces of clothes and will be forced to partially iron the clothes.
3 - This ironing board doesn't fold which makes it hard to transport when needed.

6

In relation to my project

6 This ironing board has an all wooden design which is very attractive. It also has space to space to store ironed clothes which is an added bonus. Amongst all these good attributes this design also has some bad ones. 1 - This ironing board is not adjustable which is a great disadvantage because not everyone is the same height.
2 - This ironing board is not foldable and has no wheels which means it is very hard to transport.
3 - This ironing board is very this which makes it hard to iron wide clothes.
4 - This ironing board has extremely thin legs which means it is fragile and this is not a good design quality.

In relation to my project

7 This ironing board has a lovely all plastic design which is very durable and strong, but just as any design this ironing board has more weaknesses than strengths.
1 - This ironing board is not adjustable which is a great disadvantage because not everyone is the same height.
2 - The board on which clothes are positioned when ironing is very short in terms of length and width. This shortness means the user will find it hard to iron large pieces of clothes and will be forced to partially iron the clothes.
3 - This ironing board is not foldable and has no wheels which means it is very hard to transport or move around with.
4 - This ironing board has no storage capabilities for ironed clothes and dirty laundry

8 This ironing board has a design which I have never seen before. It has a unique design which

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This ironing board was near perfect. It met all of my users needs. The questionaire can prove this. The only major problem was its inability to be adjusted in terms of height.

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This ironing board has a lovely design but sadly it does not meet any of the specifications needed from the questionnaire

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1 -This ironing board only has 2 legs which means it is hard to iron clothes because the user would have to put force to support the other side instead of focusing on the clothes.

2 - This ironing board has no storage capacity which means the user would have to put the ironed clothes on the floor which ruins the whole purpose.

3 - This ironing board has a height which cannot be adjusted and this is a disadvantage because not everyone is the same height.

4 -This ironing board doesn't have wheels which means it is immobile and this will disadvantage the user because he has to go to 1 area to use it

5 -The ironing board on which ironing is done is also extremely thin and short which means the user will find it hard to iron clothing

9 This ironing board will be mounted onto the wall using various techniques. This design however has a lot of problems

1 - The board on which ironing will be done is too short in terms of length , this will disadvantage the user as they will be forced to only iron short clothes

2 -The ironing board has no storage capacity which is a great disadvantage because the person who would have ironed the clothes will have nowhere to place them

3 - This ironing board looks very fragile as it has an all wooden body and it is hung from the wall

4 -This ironing board is immobile as it has no wheels and is mounted to the wall. This is a disadvantage because the user is forced to go to 1 place to use it

10 this ironing board has a very intricate design which is lovely and attractive. The ironing board can be used as both an ironing board and a chair, this is something you don't normally see. As much as it has advantages it also has disadvantages

1 - This ironing board has no storage space to store ironed clothes

2 - The height of this ironing board is not adjustable which is a disadvantage because not everyone is the same height

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This ironing board is very unique. It has a 1 of a kind design which is really nice and blends in sem seamlessly. None the less it is far from the perfect design needed from the questionnaire so I will not choose it

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This ironing cabnet has a lovely design. It can work both as a chair and as an ironing board. Apart from this it lacks most of the requirements from the questionnaire

11 This ironing

wooden design which is very attractive
space to store ironed clothes which is a

After looking at all these designs I realised that most of them have many of the same problems. This one includes. The biggest problem on this design is its inability to change height and this is a necessity.

Amongst all these good attributes this design also has some bad ones. 1 - This ironing board is not adjustable which is a great disadvantage because not everyone is the same height.
2 - This ironing board is not foldable and has no wheels which means it is very hard to transport.
3 - This ironing board is very this which makes it hard to iron wide clothes.
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12

In relation to my project

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In relation to my project

14

this ironing board has a very dull design which is unattractive and later on becomes a design hazard because of all its flaws.

1- This ironing is weigh too low it is literally on the ground and it is not adjustable which is disadvantage because not everyone is short

2- This ironing board has n clothes

3- This ironing board has n it not portable

15

In relation to my project

15

this ironing board has a very intricate design which is lovely and attractive. The ironing board can be used as both an ironing board and a chair, this is something you don't normally see. As much as it has advantages it also has disadvantages

1- This ironing board has no storage space to store ironed clothes

2- The height of this ironing board is not adjustable which is a disadvantage because not everyone is the same height

3- This ironing board is immobile which is a disadvantage because the user go to one place to use it

4- The board on which the ironing is done is to thin and short which the user will find it had to iron large pieces of clothing

16

In relation to my project

16

This ironing board has a lovely all plastic design which is unique and attractive. As much as it has advantages it also has disadvantages

1- This ironing board is not adjustable which is a great disadvantage because not everyone is the same height.

2- This ironing board is not foldable and has no wheels which means it is very hard to transport.

3- This ironing board is very this which makes it hard to iron wide clothes.

17

In relation to my project

17

This ironing board which also doubles as a ladder has a very lovely and attractive design. But just like every design it has a lot of disadvantages

1-It has no storage capability which is a great disadvantage.

2-This ironing board has a height which cannot be adjusted

3-This ironing board has no wheels so it is not portable

4-This board cannot be folded so it is hard to transport

14

this ir

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hazard because of all its flaws.

1- This ironing is weigh too lo
ground and it is not adjus
because not everyone is sho
2- This ironing board has no
clothes
3- This ironing board has no
it not portable

This ironing board is very unique but it is also very useless and dangerous. The board is on the floor which make it very hard to use and is user friendly.

15

this iron

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be used as both an ironing boa
something you don't normally
advantages it also has disadva
1- This ironing board has nc
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2- The height of this ironing
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3- This ironing board is immobile which is a disadvantage because the user go to one place to use it
4- The board on which the ironing is done is to thin and short which the user will find it had to iron large pieces of clothing

This ironing board has a very advanced and intricate design which is user friendly but lacks all the specifications from the questionaire

16

lovely all plastic design which
much as it has advantages it
1- This ironing board is not a
disadvantage because not eve
2- This ironing board is not fo
which means it is very hard to
3- This ironing board is very
iron wide clothes.

This ironing board nearly had all the specifications it just lacked the 3 things stated in this list, If these were to be fixed it would be a lovely design.

17

doubles as a ladder has a very
But just like every design it ha
1- It has no storage capability
disadvantage.
2- This ironing board has a h
3- This ironing board has no
4- This board cannot be folde

As we can see here ironing boards have more than one use but their main objective is to be used to iron and store clothes which is what this one almost does to a T. It just fails to do this in 3 specific areas so I would not be able to use it

18

This ironing board is rather simple and plan. It has a lot of advantages but on this design the good outweighs the bad.

1- This ironing board has no storage capacity which is a disadvantage because the user would have to put ironed clothes on the floor.
2- This ironing board has no wheels which means it is not easily portable, this means the user would have to go to 1 area to use it which is an inconvenience.
3- This ironing board has a height which cannot be adjusted and this is a disadvantage because not everyone is the same height.
4- This ironing board has a base which is made is made out of plastic so it can be easily melted if the iron gets too hot

19

In relation to my projet

19

This ironing board is interesting and intriguing. It has an all metal body with eccentric curves which increases its looks. It has a lot of advantages but it also has a million disadvantages

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8- This ironing board has a base which is made is made out of plastic so it can be easily melted if the iron gets too hot

20

In relation to my projects

20

This ironing board will be mounted onto the wall using various techniques. This design however has a lot of problems

1- The board on which ironing will be done is too short in terms of length, this will disadvantage the user as they will be forced to only iron short clothes
2-The ironing board has no storage capacity which is a great disadvantage because the person who would have ironed the clothes will have nowhere to place them
3-This ironing board is immobile as it has no wheels and is mounted to the wall. This is a disadvantage because the user would have to go to one location to use it
4-This ironing board has a height which cannot be adjusted, this is a disadvantage because not everyone is the same height

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This ironing board has an all metalic body which is very strong. The ironing board is just lacking many of the needed specifications from the questionnaire

19

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This ironing board is very unique. It has a 1 of a kind design which is really nice and blends in ~~5th~~ seamlessly. None the less it is far from the perfect design needed from the questionnaire

Maintanance

- It should be make from material which is easy to clean and maintain
- It should be make from easy to source material
- The device should be make from material which does not stain easily so that a high standard of living is kept
- It should be make from easy to source material

Safety

- The device should be make out of material which is safe and strong, it shouldn't have any split ends
- It should be make from material which is smooth to increase safety
- The device should be stable in use so it doesn't injure the user

Use and performance

- This device should be used in the laundry room and it should be used by anyone
- The device should be stable in use
- The device is supposed to have storage capabilities
- The device should be safe for the user while in use

Appearance

- The device should be elegant and lovely in appearance so it is deened as a high quality product

Life expectancy

I expects this device to last for 4 to 5 years because it will be make out of durable and strong material. The device is also ~~at~~ going to be easy to maintain so this will extad its life span.

Environmental requirements

- This device should not produce any scents ~~that~~ ~~with~~ which will be toxic and harm people
- It should be environmentally friendly
- It should match the colour of the room and blend in
- It should be kept indoors

Possible solutions

Performance

This ironing board barely performs its task and in the process might harm the user.

Appearance

This ironing board has a very unique and lovely appearance

Finish

This device has a blue paint Finish which is neat and does not cause discomfort to the user

Analysis

This ironing board is very unique. It barely performs its task and in the process might harm the user.

Shape

This device has a dull and boring shape which has more disadvantages than advantages. One of the biggest disadvantages is that the height can not be changed

ad

- It has a large area to iron
- It is easy to use

disad

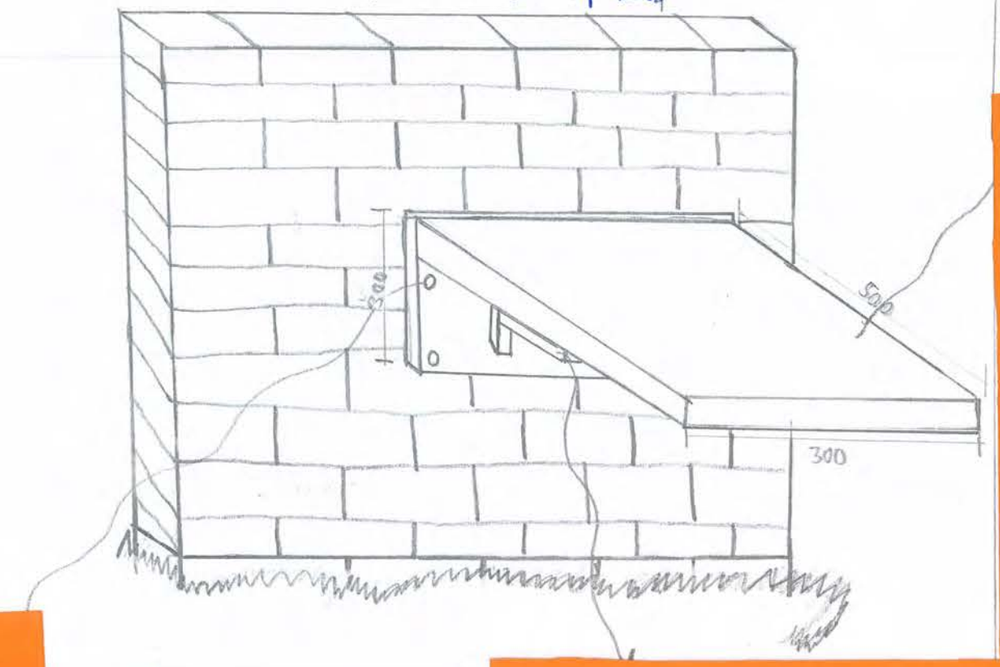
- It has a permanent position

maintenance

This device is very hard to maintain as it collects dirt very easily and it is placed permanently on the wall which is a compromising position

Life expectancy

This device is expected to last for a very short period of time because of the lack of support on the top board



safety

This ironing board is very unsafe as it can easily fall and injure the user or injure a random person who

Environmental requirements

This device should be put in an environment without dirt or children because it might injure the childre

How the wooden pieces are joined

How the device is mounted to the wall

ad

- The bolts can be removed
- Bolted connections are faster to make
- High strength bolts are much stronger than rivets

Board support system

Performane

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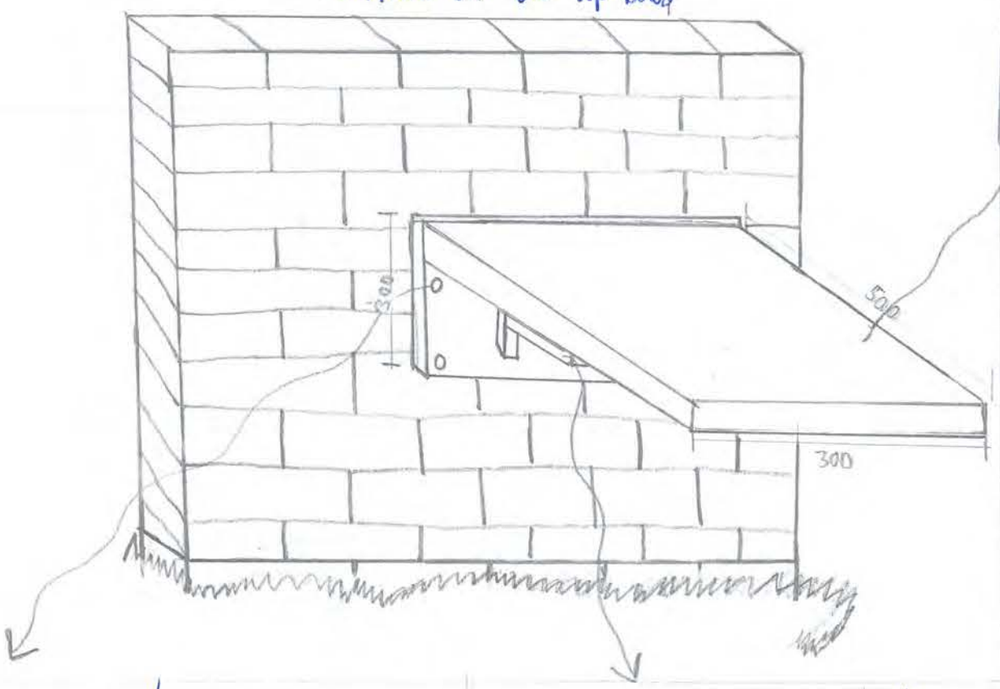

safety

This ironing board is very unsafe as it can easily fall and injure the user or injure a random person when they are walking

Environmental requirements

This device should be put in an environment without dirt or children because it might injure the child and is hard to clean

material

The top board of this ironing board is made out of linn wood, this is because linn wood is easy to work with and has a fine grain and structure

ad

- It is easy to find & readily available
- It is easy to work with
- It has a fine texture

disad

- It is heavy and stiff
- It takes stain easily
- It is easily chipped

maintanance

This device is very hard to maintain as it collects dirt very easily and it is placed permanantly on the wall which is a compromising position

Bolt

- Bolts were used to mount the ironing board onto the wall. A course pitch bolt was used.

Bolt disad

- Bolted connections have lesser strength in axial tension
- Under vibratory conditions bolts loose strength

ad

- The bolts can be removed
- Bolted connections are faster to make
- High strength bolts are much stronger than rivets

material

This device is made of mahogany wood. This is because it is durable and easy to maintain. It is also relatively cheap in soft board form. The device under the ironing board is used to support the board when in use

ad

- It is durable
- It is easy to work with
- It finishes well
- It is strong
- It easily blends with other furniture

disad

- It is prone to warping
- It is expensive in hard board form
- Some tropical types can be a bit soft and fibrous

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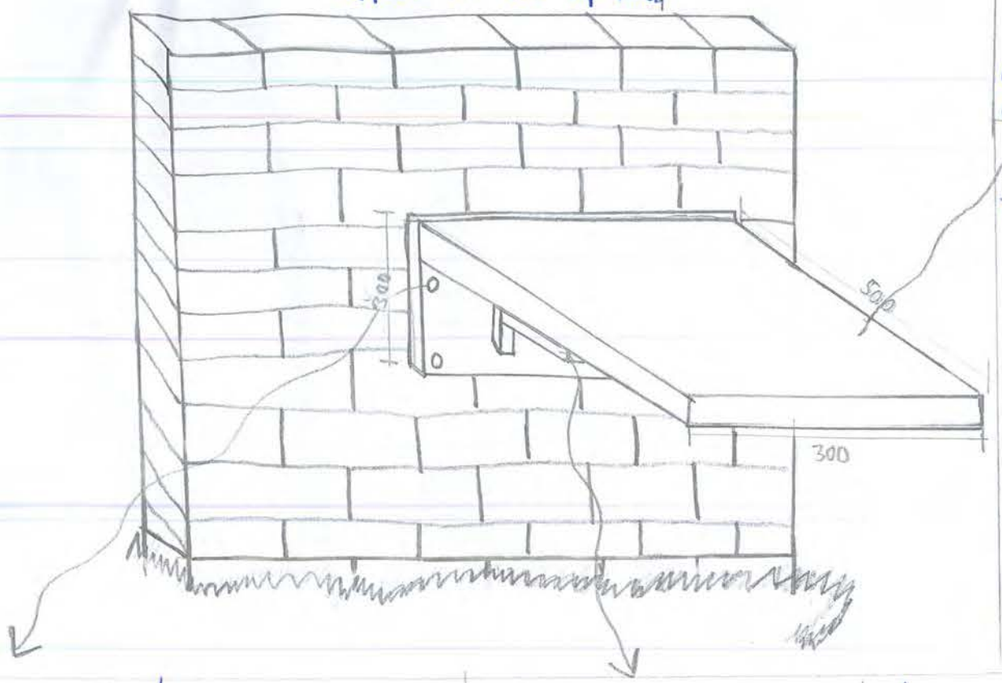
because of the lack of supports on the top board



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this device should be put in an environment without dirt or children because it might injure the children and is hard to clean

material

The top board of this ironing board is made out of liwa wood, this is because liwa wood is easy to work with and has a fine grain and structure

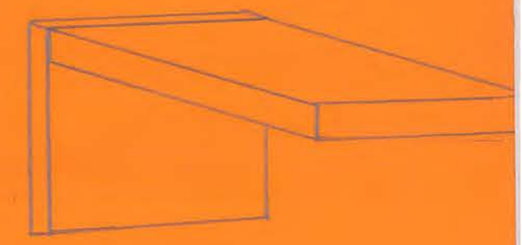
ad

- It is easy to find & readily available
- It is easy to work with
- It has a fine texture

disad

- It is heavy and stiff
- It takes stain easily
- It is easily chipped

A butt joint was used to join the wooden pieces before they went onto the wall



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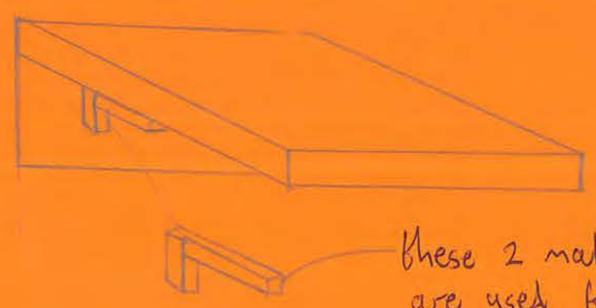


these 2 mahogany wood pieces are used to support the weight of the board on the wall

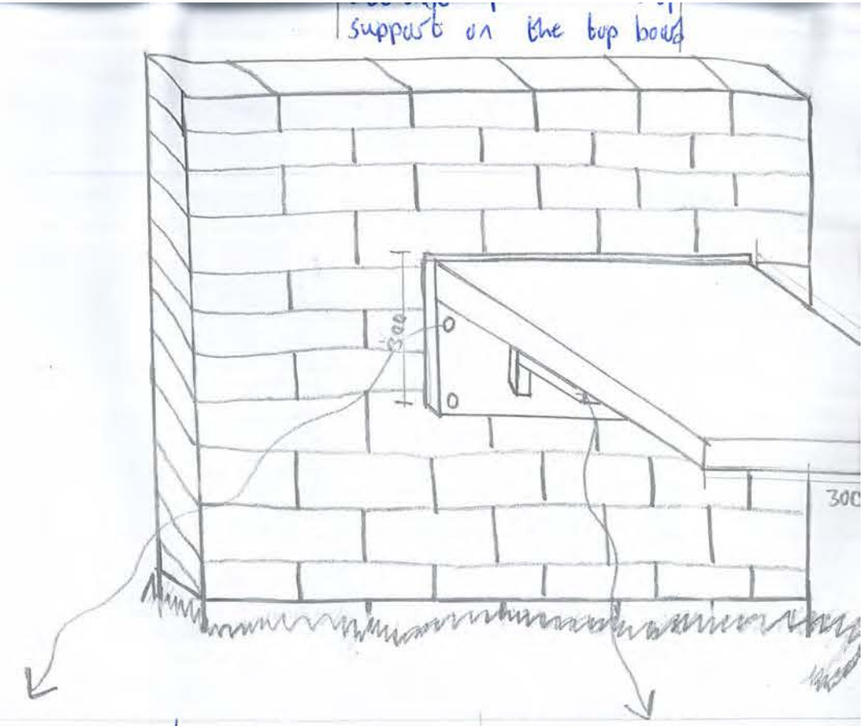
use

Finish

This device has a blue paint Finish which is neat and does not cause discomfort to the user

Analysis

This ironing board is very unique. It barely performs its task and in the process might harm the user.



shape

This device has a dull and boring shape which has more disadvantages than advantages. One of the biggest disadvantages is that the height can not be changes

ad

- It has a large area to iron
- It is easy to use

disad

- It has a permanant position
- It has no storage capacity

maintanance

This device is very hard to maintain as it collects dirt very easily and it is placed permanantly on the wall which is a compromising position

Bolt

- Bolts were used to mount the ironing board onto the wall. A course pitch bolt was used.

Bolt disad

- Bolted connections have lesser strength in axial tension
- Under vibratory conditions bolts loose strength

ad

- The bolts can be removed
- Bolted connections are faster to make
- High strength bolts are much stronger than rivets

material

This device is made of mahogany wood. This is because it is durable and easy to maintain. It is also relatively cheap in soft board form. The device under the ironing board is to support the board when in

holes were drilled into the wall then the ironing board was hung there with the use of bolts

safety

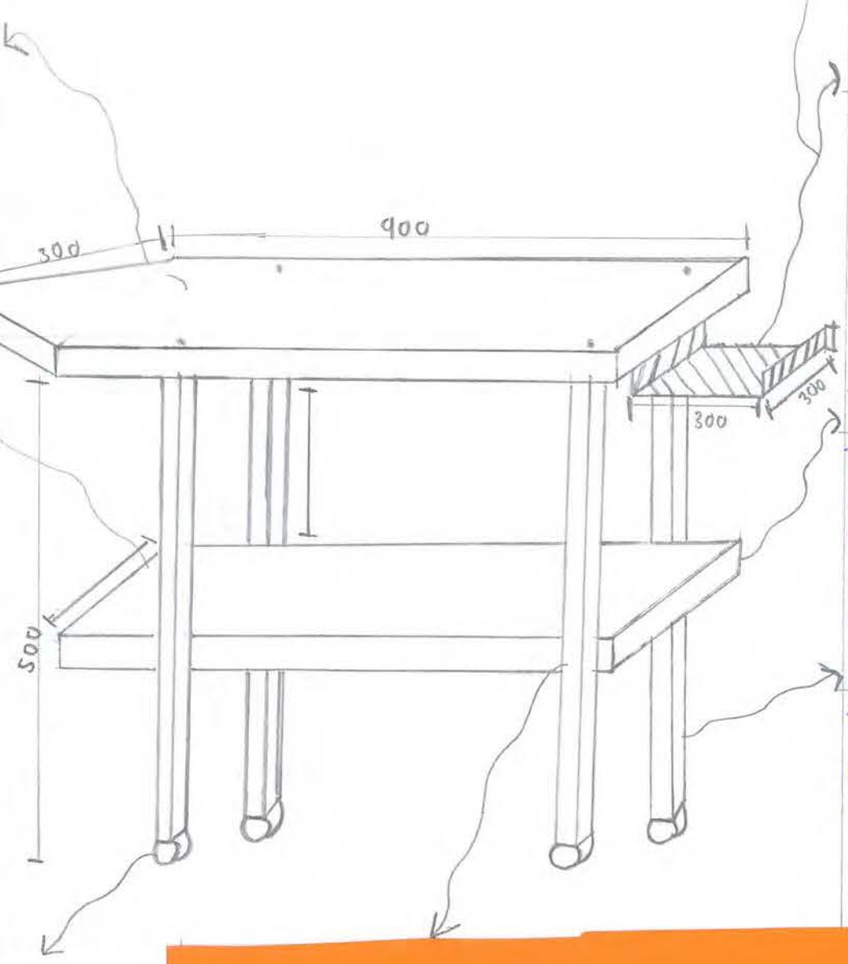
This device is very safe, it does not have any split ends or sharp edges. The shape it has is also very safe

environmental requirements

This device can only work indoors as its material absorbs moisture and is not heat resistant. It is also prone to attracting animals

top board

This top board is used to iron clothes



iron holder

This iron holder is used to hold the iron when ironing and when the board is not in use.

performance

This device was designed to iron clothes and store the ironed clothes which it does but it has more disadvantages than advantages

use

This space is used to store ironed and unironed clothes.

shape

This device has a very attractive and loud shape. Its shape just stands out which increases the value of the device. This attractive shape also allows the board to perfectly do its tasks

advantage

- It has ample space to iron
- It has ample space to store ironed clothes
- It has an iron holder

disadvantage

- It takes up a lot of space in a room
- The height is not adjustable

material

The iron holder is made out of Duralumin. This is a mixture of different types of metal

advantage

- It is light
- It is ductile
- It becomes harder when worked
- It is heat resistant

disad

- It is expensive

material

The top boards are made out of ash wood. This type of wood is strong and easy to work with

advantage

- It is durable
- It can dry naturally
- It is easy to clean

disad

- It is hard
- It is heavy
- It is not durable if ~~expos~~ exposed to harsh weather

material

The legs of this device are made from elm wood. It is tough and strong which are good ~~qualities~~ qualities for

advantage

- It does not split
- It can be used underwater
- It is light
- It is tough

disad

- It turns to wrap unless well seasoned
- It is not easy to dry

maintenance

This device can be maintained by regular checking of the nails and joints on the board. A feather duster should to remove dust and dirt on the device

Life expectancy

This ironing board has a life expectancy of about 3-4 years. This is because it was made from strong material which is durable and strong

wheel

This wheel was put unto the device in order to make it portable. This is a very essential part of the design.

How the joint looks

Finish

This device has a clear varnish finish which makes it clear and easy to clean

Analysis

This device is spacious and long which is a very good attribute. ~~and~~ This device has most of the needed requirements for a good ironing boa

safety

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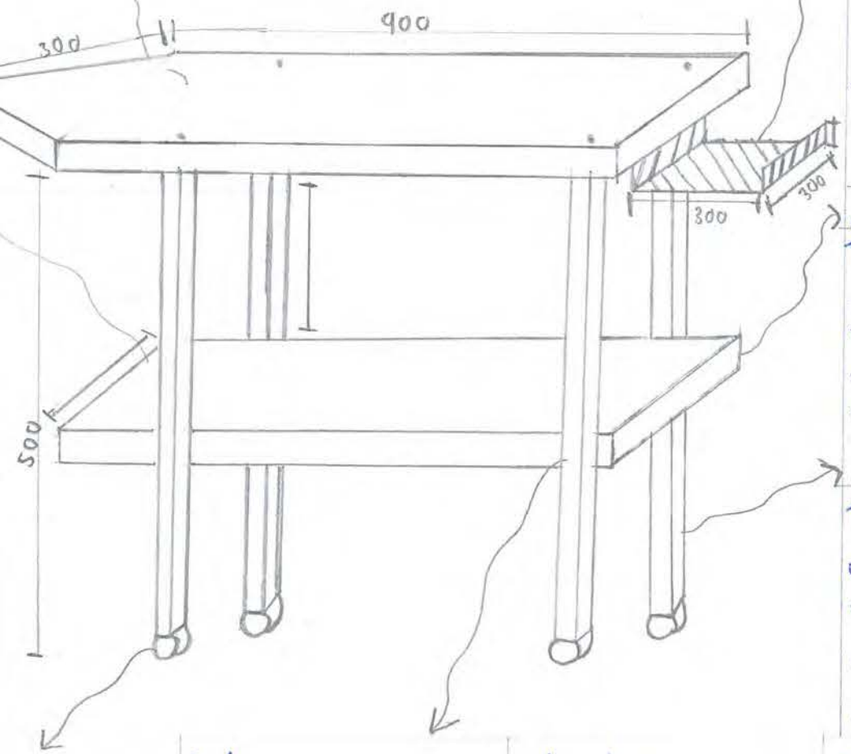

iron holder

This iron holder is used to hold the iron when ironing and when the board is not in use.

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material

The legs of this device are made from elm wood. It is tough and strong which are good ~~qa~~ qualities for legs

advantage

- It does not split
- It can be used underwater
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disad

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wheel

This wheel was put unto the device in order to make it portable. This is a very essential part of the design.

Joint

This device has a buscuit joint which ~~is about~~ was used to join the top board and the legs. It was also used to join the middle board to the legs

advantages

- It is strong
- It is easy to make
- It is lovely in appearance

Disadvantages

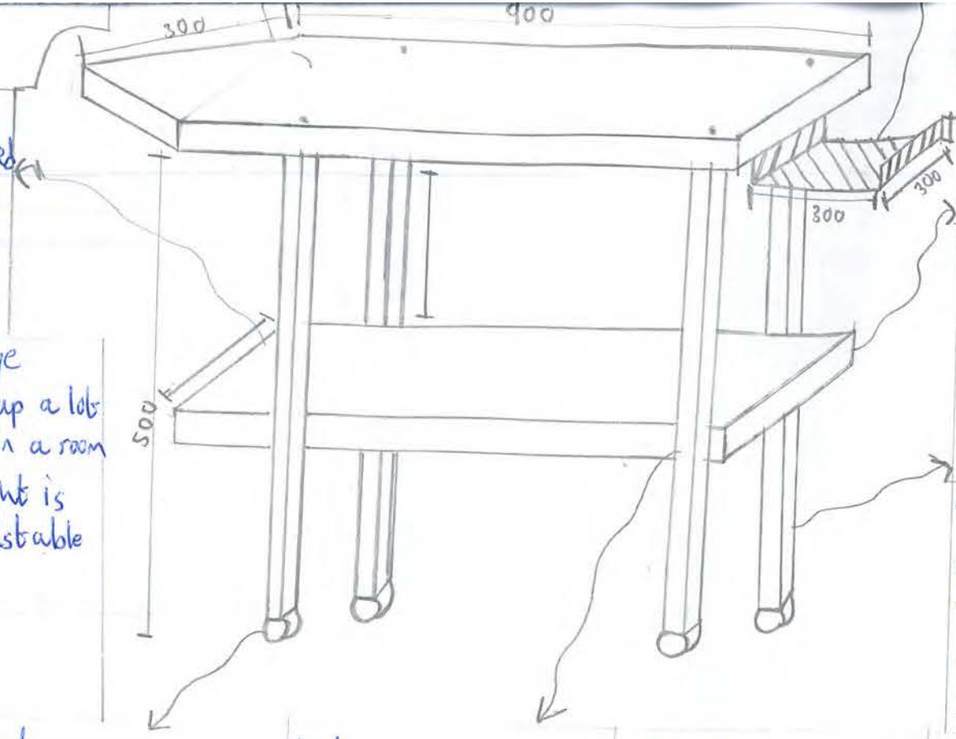
- It is time consuming to make
- It breaks if constantly used
- It is not durable

Finish

This device has a clear varnish finish which makes it clear and easy to clean

Analysis

This device is spacious and large which is a very good attribute. ~~and~~ This device has most of the needed requirements for a good ironing board



performance

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This space is used to store ironed and unironed clothes.

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advantage

- It has ample space to iron
- It has ample space to store ironed clothes
- It has an iron holder

disadvantage

- It takes up a lot of space in a room
- The height is not adjustable

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advantage

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disad

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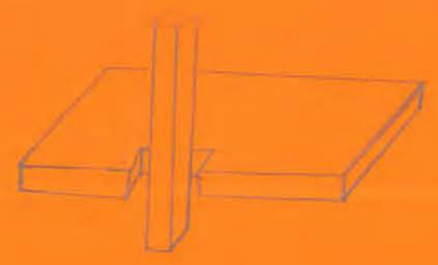
Analysis

This devic spacious which is good after ~~and~~ This has most the need requiremen a good iro



This joint will be reinforced with the use of glue and nails

environmental requirements

This ironing board can be used in any environments. It is heat and water resistant which are great qualities.

Use

This top board sack is used to store unironed clothes. They are placed in there for easy access when ironing. The sack was glued to the board so that it doesn't fall off.

shape

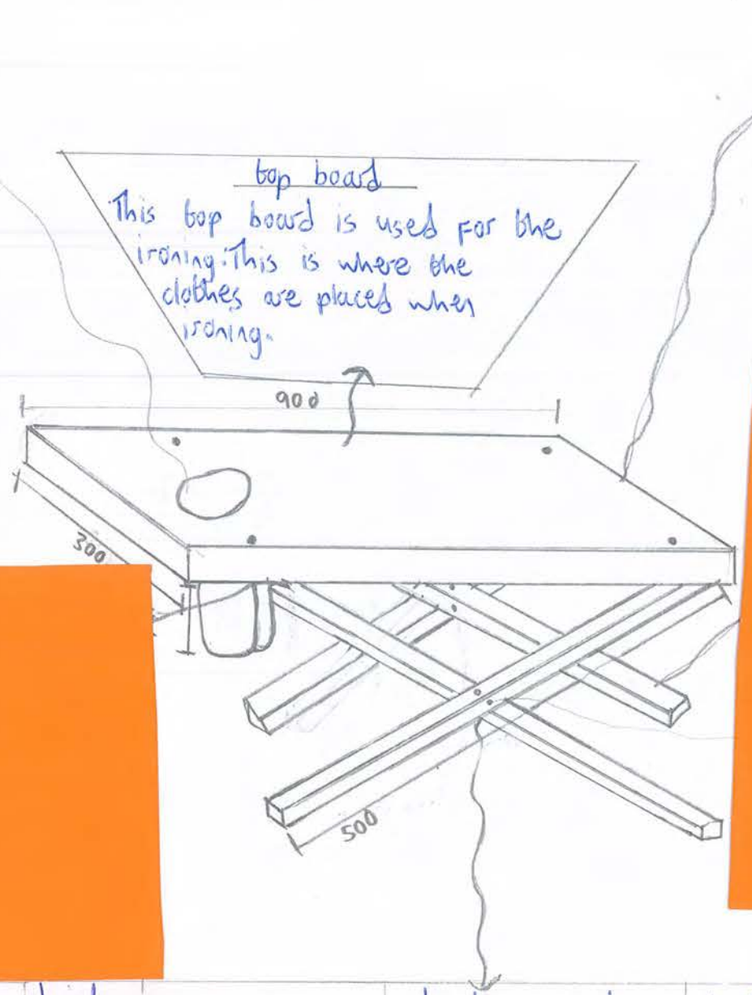
This ironing board has a very interesting and lovely shape. It has a unique design which is extremely attractive

advantage

- Its heights can be adjusted
- It has storage space for unironed clothes

Disadvantage

- It is not portable
- The legs have no stability
- It can not store ironed clothes



material

material

How the joint looks

Bolt

Life expectancy

This ironing board is expected to last for at least 3 years because the metal legs are strong as well as the joints and it is relatively cheap to maintain

Finish

This ironing board has a paint finish which is neat, easy to clean and lovely in appearance

maintanance

This device is very easy to maintain. For it to be maintain it needs to be constantly wipped and the bolts need to be constantly checked

Joint

advantages or type

is one of the most used bolts in the world.

cheap

How the joint looks

performance

This ironing board has all the necessary requirements for an amazing ironing board which means it fulfills its users needs to the T

Appearance

This device has a very lovely, and intricate shape which makes it very attractive. This device does not take up a lot of space which is an advantage

safety

This device is extremely safe. It has no sharp edges or splinters at the ends of the top board

environmental requirements

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Use

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shape

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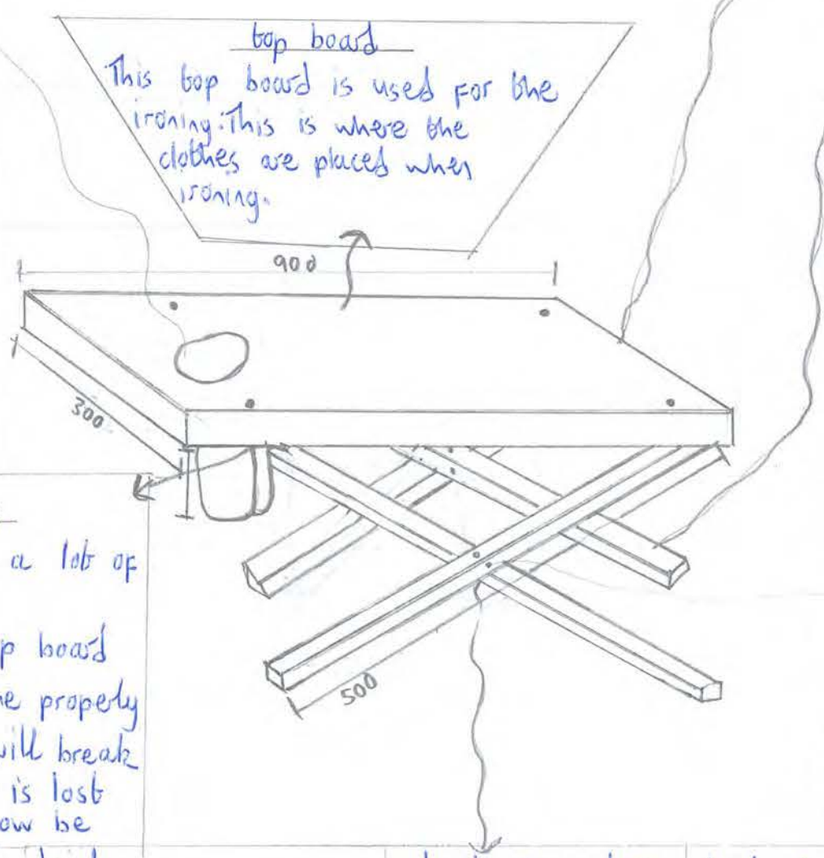
advantage

- Its height can be adjusted
- It has storage space for unironed clothes
- It has a lot of space for ironing

Disadvantage

- It is not portable
- The legs have no stability
- It can not store ironed clothes



materials

The top board is made out of block board. This is because of its lightness and it is easy to work with

material

The metal legs are made out of bronze metal which is a very strong type of metal

advantages

- It is light in weight
- It has low chances of staging or bending
- It is cheap
- It is better than other boards

advantages

- It is durable
- It is tough
- It is hardwearing
- It is corrosion-resistant
- It does not rust

disadvantage

- It is not as stro as ply wood
- It is not as good quality as solid wood
- If not prepared properly it will hav gaps inbetween it

disadvantages

- It is expensive to a certain extent
- It is heavy in large quantities

Joint

The metal legs were welded to a long thin piece of metal which was then bolted to the wooden board.

advantage

- It is strong when done properly.
- It is easy to assemble
- It is easy to disassemble
- It is cheap to make

disadvantages

- It requires a lot of metal.
- If the top board is not done properly the joint will break
- If the bolt is lost board will now be ineffective

Bolt

The bolts used to join the two pieces of metal is called a carriage bolt. It is one of the most used bolts in the world.

advantage

- It is strong
- It does not require skilled labour.
- It is relatively cheap

Disadvantages

- They are small and easy to loose

Life expectancy

This ironing board is expected to last for at least 3 years because the metal legs are strong as well as the joints and it is relatively cheap to

Finish

This ironing board has a paint finish which is neat, easy to clean and lovely in appearance

maintanance

This device is very easy to maintain. For it to be maintained it needs to be constantly wipped and the bolts need to be constantly checked

Joint

These two metal legs are bolted together.

This bolt is a carriage bolt. This bolt is one of the most used bolts in the world

advantages of type of joint

- It is easy to assemble
- It is cheap
- It is easy to disassemble
- It allows portability

disadvantages of ~~type~~ type of joint

- If the bolt is lost the ironing board will be useless
- It is not durable because bolts loose strength overtime

~~maintanance~~ performance

This ironing board has all the necessary requirements for an amaizing ironing board which means it fulfills its users needs to the T

Appearance

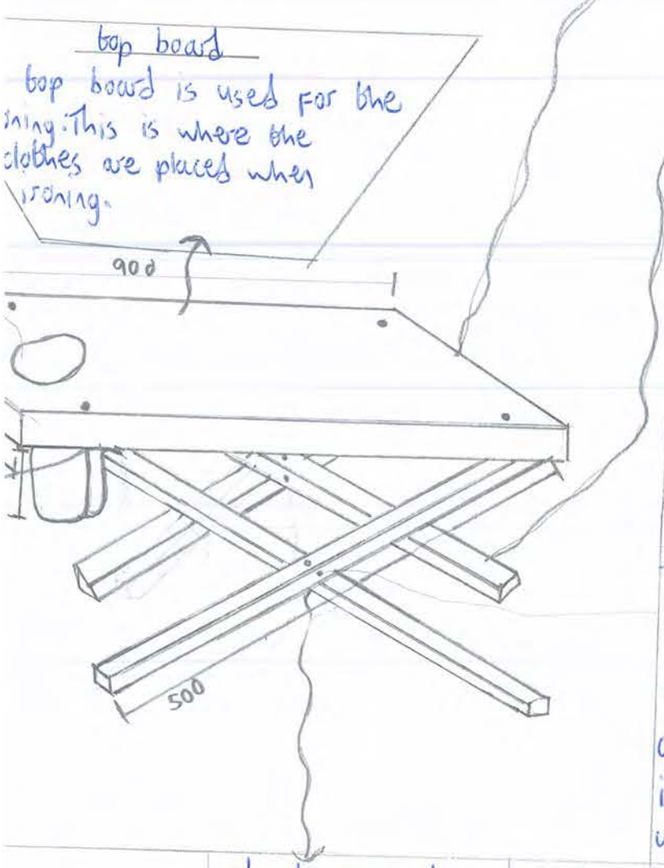
This device has a very lovely, and intricate shape which makes it very attractive. This device does not take up a lot of space which is an advantage

safety

This device is extremely saf It has no sharp edges o splinters at the ends of the top board

top board

top board is used for the ning. This is where the clothes are placed when ironing.



materials	advantages	disadvantage
The top board is made out of block board. This is because of its lightness and it is easy to work with	• It is light in weight • It has low chances of staging or bending • It is cheap • It is better than other boards	• It is not as strong as ply wood • It is not as good quality as solid wood • If not prepared properly it will have gaps inbetween it

material	advantages	disadvantages
The metal legs are made out of bronze metal which is a very strong type of metal	• It is durable • It is tough • It is hardwearing • It is corrosion-resistant • It does not rust	• It is expensive to a certain extent • It is heavy in large quantities

Bolt	advantage	Disadvantages
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advantages of type of joint	disadvantages of ~~tp~~ type of joint	~~maintenance~~ performance	Appearance	safety
• It is easy to assemble • It is cheap • It is easy to disassemble • It allows portability	• If the bolt is lost the ironing board will be useless • It is not durable because bolts loose strength overtime	This ironing board has all the necessary requirements for an amazing ironing board which means it fulfills its users needs to the T	This device has a very lovely, and intricate shape which makes it very attractive. This device does not take up a lot of space which is an advantage	This device is extremely safe. It has no sharp edges or splinters at the ends of the top board

The legs of

environmental requirements

This ironing board can be used in any environment. It is heat and water resistant which are great qualities.

Use

This top board sack is used to store ironed clothes. They are placed in there for easy access when ironing. The sack was glued to the board so that it doesn't fall off.

shape

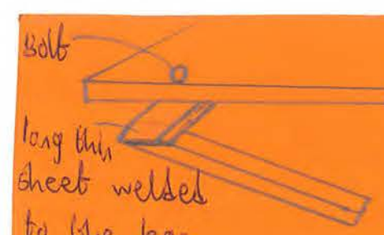
This ironing board has a very interesting and lovely shape. It has a unique design which is extremely attractive and it increases its value

advantage

- Its height can be adjusted
- It has storage space for ironed clothes
- It has a lot of space for ironing

Disadvantage

- It is not portable
- The legs have no stability
- It can not store ironed clothes



The thin sheet is used to join the wooden board and the legs with the use of a bolt

Joint

The metal legs were welded to a long thin piece of metal which was then bolted to the wooden board.

advantage

- It is strong when done properly.
- It is easy to assemble
- It is easy to dissemble
- It is cheap to make

disadvantages

- It requires a lot of metal.
- If the top board is not done properly the joint will break
- If the bolt is lost board will now be ineffective

Life expectancy

This ironing board is expected to last for at least 3 years because the metal legs are strong as well as the joints and it is relatively cheap to maintain

Finish

This ironing board has a paint finish which is neat, easy to clean and lovely in appearance

maintanance

This device is very easy to maintain. For it to be maintained it needs to be constantly wipped and the bolts need to be constantly checked

Joint

These two ... are bolted

This bolt is ... bolt. This bo... of the most ... in the worl...

This bo... ironing ... clothe... iro...

300

board so that it doesn't fall off.

shape

This ironing board has a very interesting and lovely shape. It has a unique design which is extremely attractive and it increases its value

advantage

- Its height can be adjusted
- It has storage space for unironed clothes
- It has a lot of space for ironing

Disadvantage

- It is not portable
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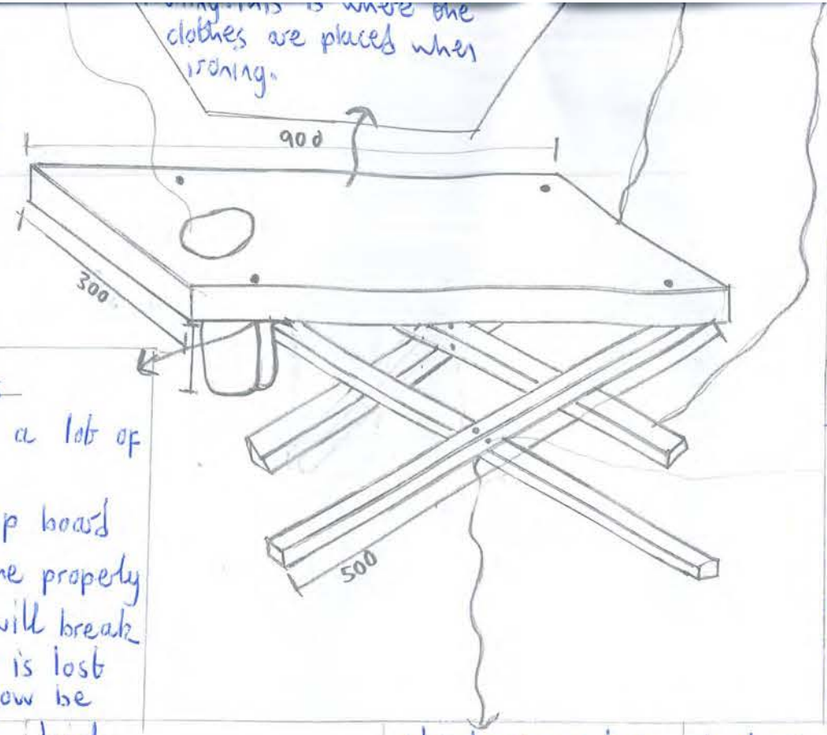

The metal legs are made out of bronze metal which is a very strong type of metal

adva

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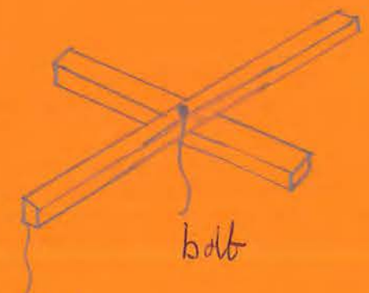


The legs of the board are adjusted to either make the board taller or ~~shorter~~ shorter. This is why a bolt was used to join them

Analysis

This ironing board has a great design but it is very short. Its inability to change in height makes it hard to use

environmental requirements

This ironing board can be used in any environment because it is versatile

maintanance

This board is very easy and cheap to maintain. Its varnish finish enables it to only need to be dusted and wipped in order for it to be maintained

safety

This ironing board is safe but only to a very low extent. Its edges are what cause the safety levels to be low because they are sharp and dangerous

appearance

This ironing board has a very simple and easy on the eye design. It is attractive as well as simple

Shape

This ironing board has a simple shape and design which makes it simple to look at but hard to use. The ironing board has a height which can not be adjusted and this is a great disadvantage

ad

- It has a large surface area
- It has compartments to place the iron on
- It doesn't take up a lot of space in a room

disad

- The height can't be adjusted
- It has sharp edges which makes it dangerous
- It has no storage compartments

performance

This ironing board has a large surface area which is great for ironing. The only disadvantage is that it is very short which makes the design of the board bitter sweet

Finish

This ironing board has an acrylic varnish finish which is lovely and very easy to apply

Joint

The metal leg was nailed to the wooden board to keep them joined together. Super glue was then added to strengthen the joint.

ad

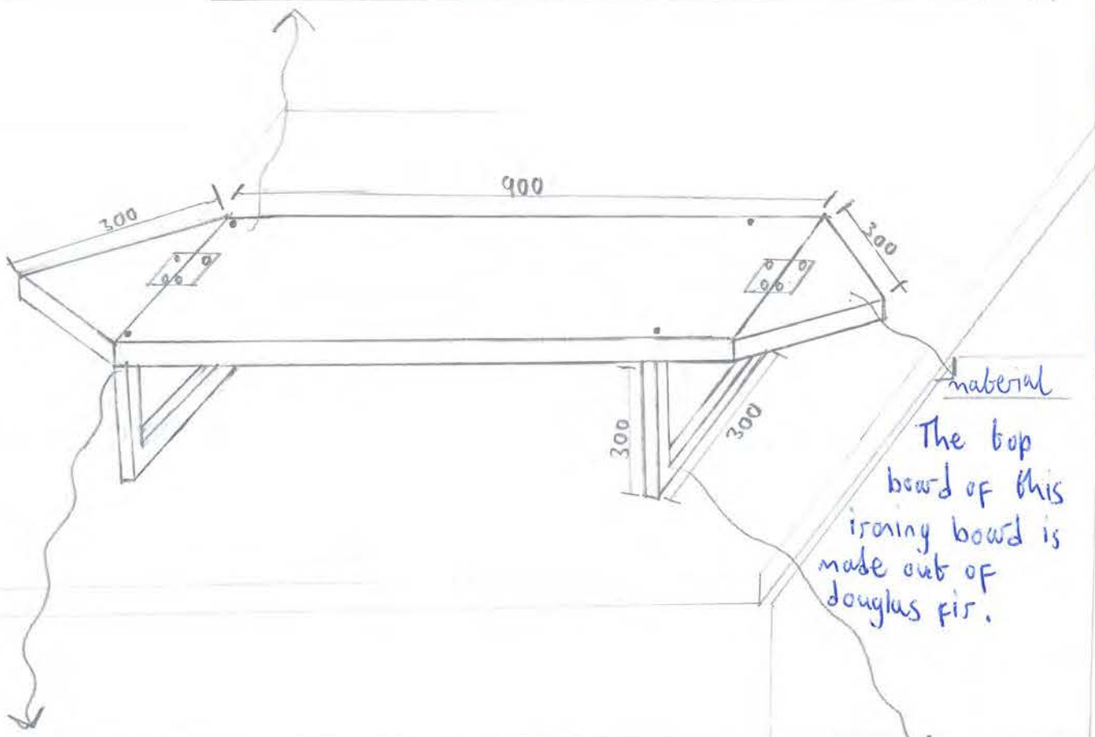
- It is cheap to manufacture
- It is easy to make
- It doesn't take a long time to make

disad

- The joint is not strong
- It is easy to break

top board

This top board is used for ironing. It is where the user places the clothes then irons them



Support system

material

The top board of this ironing board is made out of douglas fir.

ad

- It is extremely strong
- It is easy to apply a finish on

disad

- It is expensive
- It is hard to work with
- It is easily stained
- It has no distinct grain patterns

material

This leg is made out of titanium steel. This particular type of metal has a lot of advantages and disadvantages

ad

- It is corrosion resistant
- Its strong
- Its not dense
- It has a high melting point
- It has a low thermal and electronic conductivity rate

disad

- It is expensive
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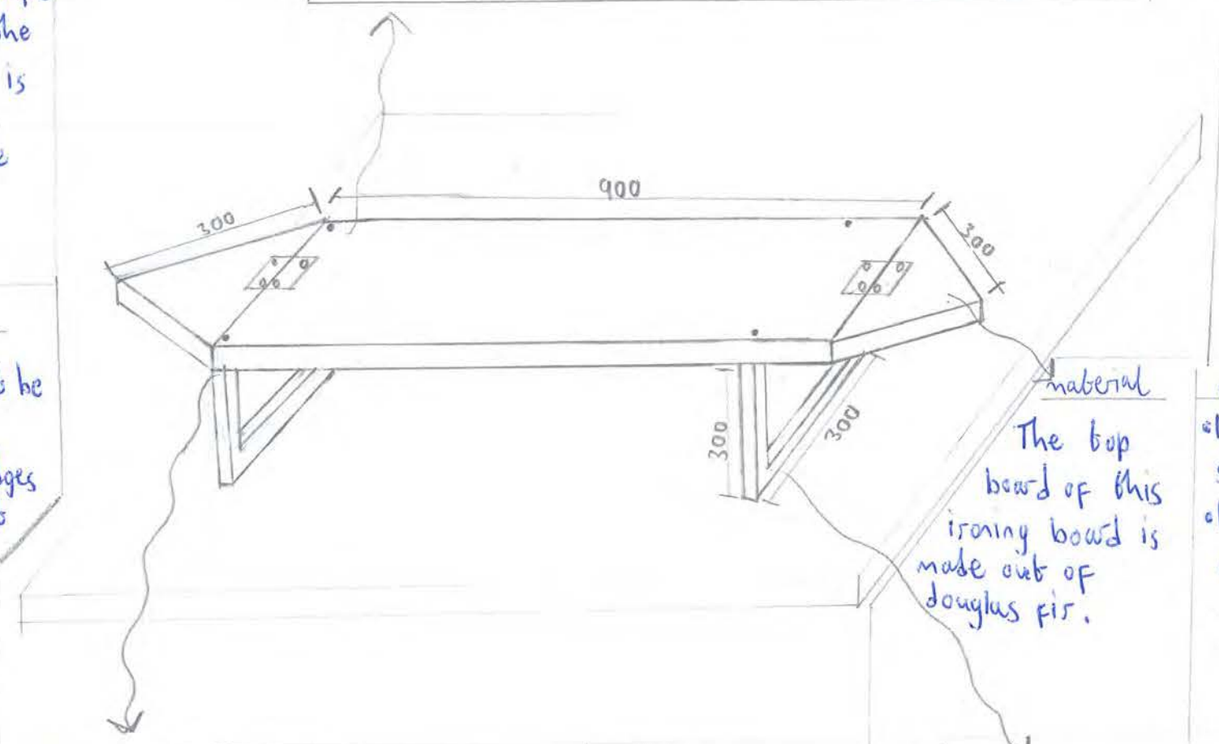

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The iron holders have a but hinge which was placed on the top of the boards. This allows the holders to withstand the weight of the iron and bed when not in use

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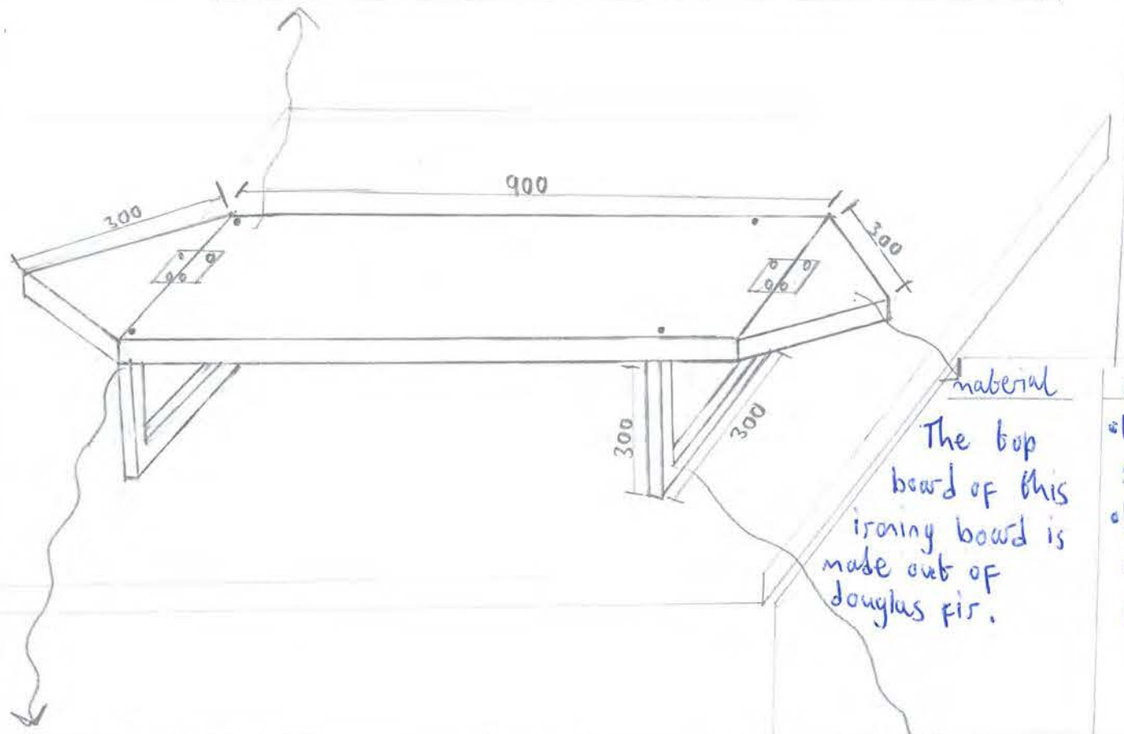

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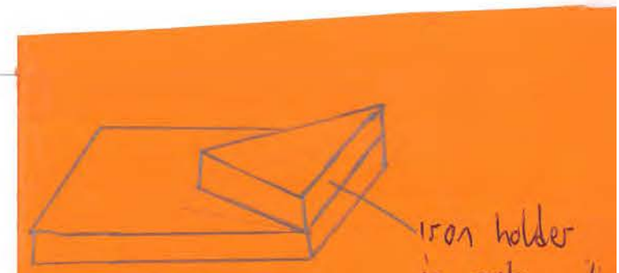

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shape

This board has a dull and boring shape. The shape and design does not allow the height to be changed and adjusted which is very important

advantage

- It has a lot of ironing space
- It has a place to put the iron when ironing
- It is portable

disadvantages

- The heights can't be adjusted
- It has no storage space
- The positioning of the board for ironing is terrible

material

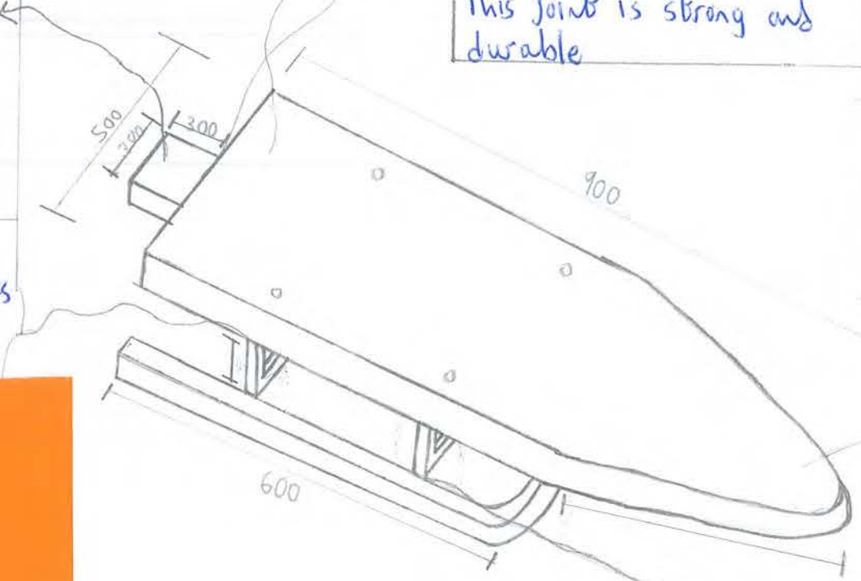
This holder is made out of red cedar wood. This type of wood is strong and it is heat resistant when the right finish is applied

Advantage

- It is light in weight
- It contains natural protective oils
- It has a fine silky surface

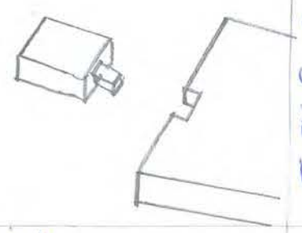
Disadvantage

- It is vulnarable to beetles
- It attracts wild life
- It is prone to flogging



Joint

The iron holder was joined to the top board by using a biscuit joint. This joint is strong and durable



Joint

material

The top board is made out of pine wood because it is light in weight and it grows very quickly.

environmental requirements

This ironing board can be used in any environment. It is water and heat resistant

advantages

- It has a lovely colour
- It has a good grain pattern
- It grows quickly

Analysis

This device is small and dull. It is extremely short and spacious yet it has no storage space or capabilities

Disadvantages

- It is prone to wrapping
- knots fall out leaving split ends

How the Joint looks

Board

This board is used for ironing. The clothes are placed on the board then the ironing happens.

maintanance

Since this device is made out of both metal and wood it will be a bit hard to maintain. The metal will need to constantly be polished and the wood will need to be constantly repainted or revarnished.

safety

This ironing board is very safe as it has no sharp edges and it is extremely user friendly even tho it is low. It was joined in a manner that that didn't leave overlapping material

Appearance

This ironing board has a very unique and complex shape. This complexity makes it very attractive and easy on the eye

Performance

This device has a height which makes it hard to to use. This height can't be adjusted which is a great disadvantage because not everyone is the same height

Finish

This ironing board has a shellac varnish finish is very nice and easy to apply and maintai

How the metal joint looks

shape

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advantage	disadvantages
• It has a lot of ironing space • It has a place to put the iron when ironing • It is portable	• The height can't be adjusted • It has no storage space • The positioning of the board for ironing is tersible

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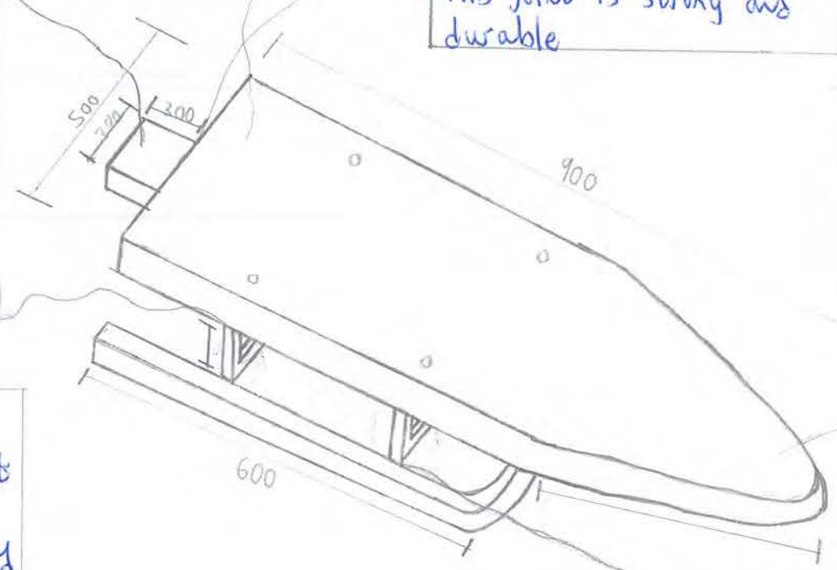

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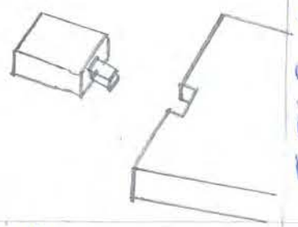

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Joint

The metal legs were welded to a long thin piece of metal which was then bolted to the wooden board

advantage	Disadvantage
• It is strong when done properly • It is easy to assemble • It is cheap to make • It is easy to dissasemble	• It requires a lot of metal • If the top board is not done properly the joint will break • The bolt is easy to loose.

Board

This board is used for ironing. The clothes are placed on the board then the ironing happens.

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This ironing board has a shellac varnish finish is very nice and easy to apply and maintain.

Joint

These two metal bars were welded together. This method of joining is extremely easy to do and it is not time consuming.

Advantage

- It is strong
- It doesn't take time to do
- It is instant
- It is not affected by weather

Disadvantage

- If not done properly it is weak
- It needs a lot of equipment to do
- It might lead to blindness

This holder is made out of red cedar wood. This type of wood is strong and it is heat resistant when the right finish is applied

- It is light in weight
- It contains natural protective oils
- It has a fine silky surface

Disadvantage

- It is vulnarable to beetles
- It attracts wild life
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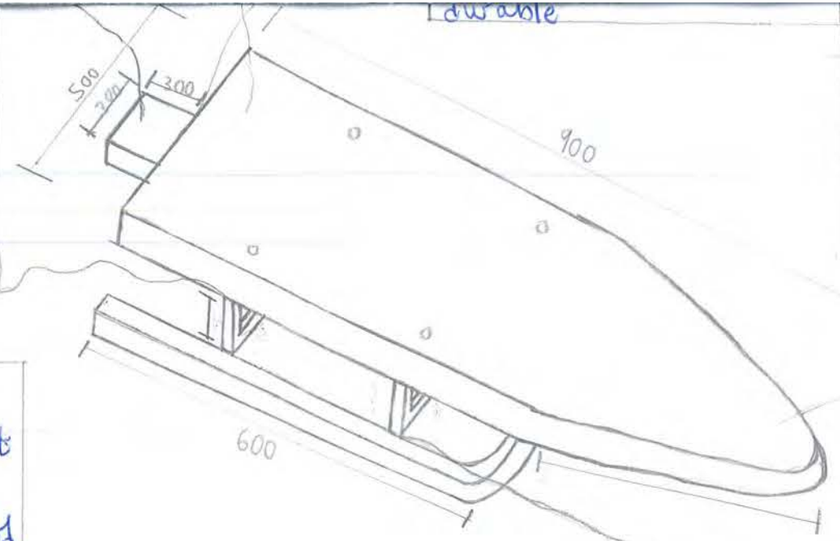
durable



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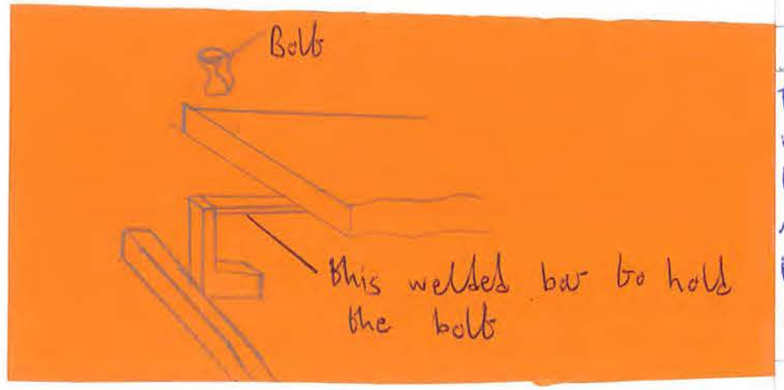
welded metal pieces

The 2 legs were welded together which is a very strong method of joining metal bars



shape

This board has a dull and boring shape. The shape and design does not allow the height to be changed and adjusted which is very important

advantage

- It has a lot of ironing space
- It has a place to put the iron when ironing
- It is portable

disadvantages

- The height can't be adjusted
- It has no storage space
- The positioning of the board for ironing is terrible

material

This holder is made out of red cedar wood. This type of wood is strong and it is heat resistant when the right finish is applied

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- It is light in weight
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Disadvantage

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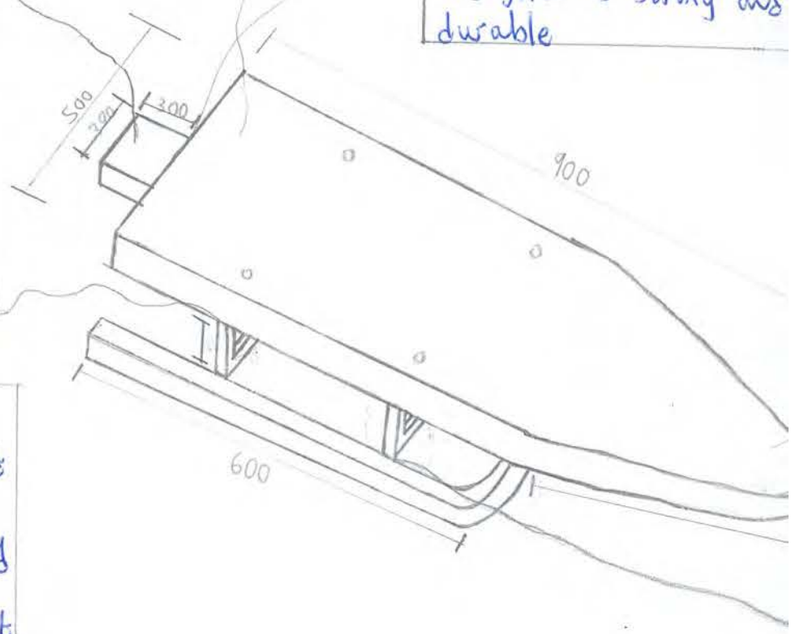

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safety

This ironing board is very safe as it has no sharp edges and it is extremely user friendly even tho it is low. It was joined in a manner that that didn't leave overlapping material

Appearance

This ironing board has a very unique and complex shape. This complexity makes it very attractive and easy on the eye

Performance

This device has a height which makes it hard to to use. This height can't be adjusted which is a great disadvantage because not everyone is the same height

Finis

This has vari very to

Appearance

This ironing board has a flawless design which is beautiful and attractive. It has a lot of compartments to store clothes which is a great advantage.

Nail

This mahogany board is joined to the metal bars by using a flathead screw which is very strong

Drawing

A top board

This top board is used for ironing clothes

Iron placements board

This board is where the iron is placed when ironing is not taking place. It can also hold a hot iron because of the material used to cover it

environmental requirements

This ironing board can be used in any environment because of its great qualities

shape

This ironing board has a lovely and excetric shape

Welding

This joint here was made by acr welding. This type of welding is easy to do as well as being strong

Advantages

- the equipment needed for it is cheap
- It works on disty metal
- materials needed for it are easy to transport

Disadvantages

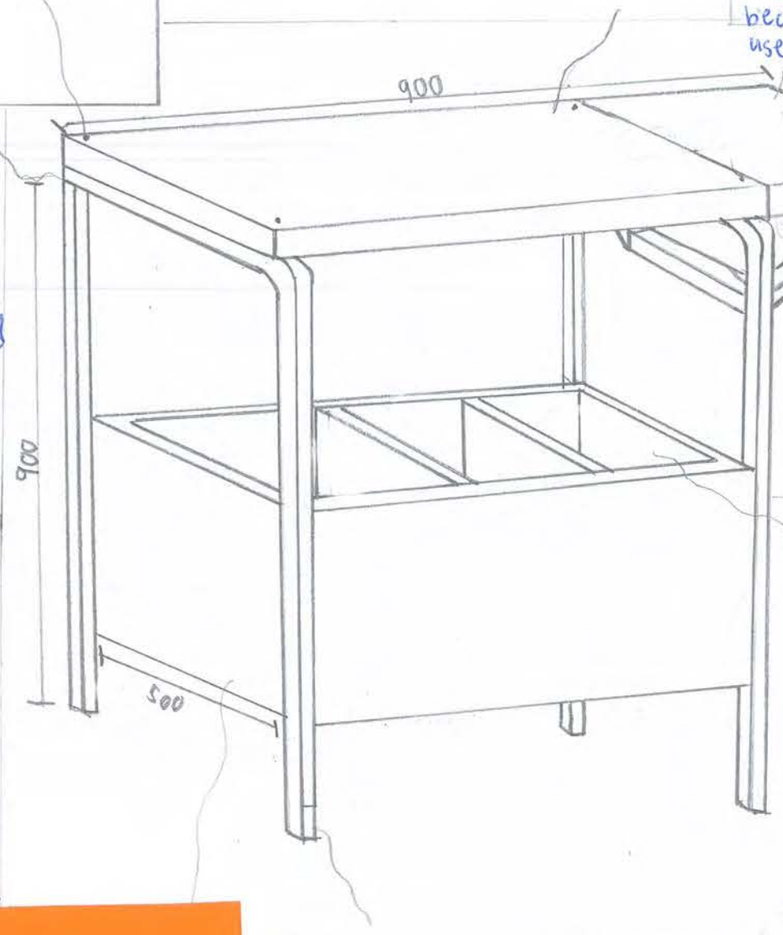
- It produces a lot of waste
- to operate the machinery you need to be highly skilled
- It can be bough to weld this material

safety

This ironing board is very safe and user friendly. It can be used by people of all ages and it will not harm anyone when in use

maintenance

This ironing board is very easy to maintain. It can be maintained by cleaning the device with water and a cloth. The user is also supposed to check



Supports system

Open Space

How the wooden pieces are joined together

How the wood stays on the metal bars

material

The legs of this ironing board are made out of stainless steel.

advantages

- It has a high level of resistance
- It is easy to clean
- It is bright and easy to maintain

disadvantages

- It is expensive
- It is hard to weld
- It is hard to clean and maintain

Life expectancy

This ironing board has a long life expectancy due to its materials being tough and strong

Finish

This device contains a light red paint finish which makes it colourful lovely and neat

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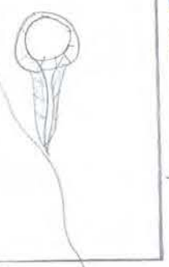

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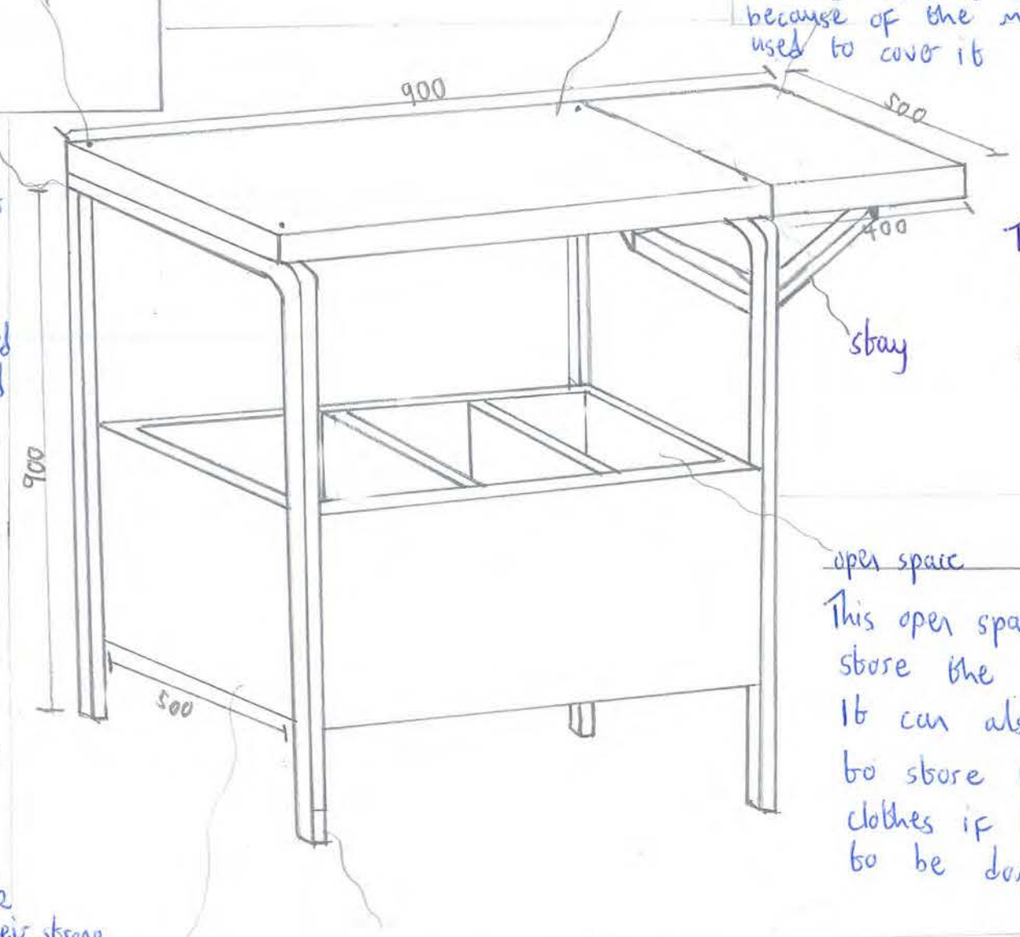

support system

The iron holder is supported by a brass stray. This stray is a very strong and efficient means of support.

safety

This ironing board is very safe and user friendly. It can be used by people of all ages and it will not harm anyone when in use

maintenance

This ironing board is very easy to maintain. It can be maintained by cleaning the device with water and a cloth. The user is also supposed to check the screws and see if their strong.

open space

This open space is used to store the ironed clothes. It can also be used to store the unironed clothes if that is needed to be done

performance

This device is easy to use and performs its tasks flawlessly. It is very effective and user friendly.

Material

All the wood on this ironing board is block board. This is because it is extremely light and easy to work with.

Advantages

- It is light in weight
- It is cheap
- It is better than practical board
- It has low chances of bending

Disadvantages

- If not prepared propely it will have gaps in between.
- It is not as strong as ply wood
- It is not as good quality as solid board

material

The legs of this ironing board are make out of stainless steel.

advantages

- It has a high level of resistance
- It is easy to clean
- It is bright and easy to maintain

disadvantages

- It is expensive
- It is hard to weld
- It is hard to clean and maintain

Life expectancy

This ironing board has a long life expectancy due to its materials being tough and strong

Finish

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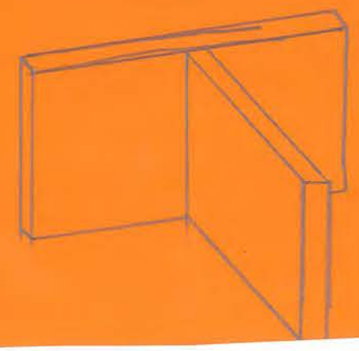
When the ~~card~~ iron holder is in the resting position



These open spaces are divided into 3 compartments using dividers. 2 spaces for ironed clothes and 1 for unironed clothes

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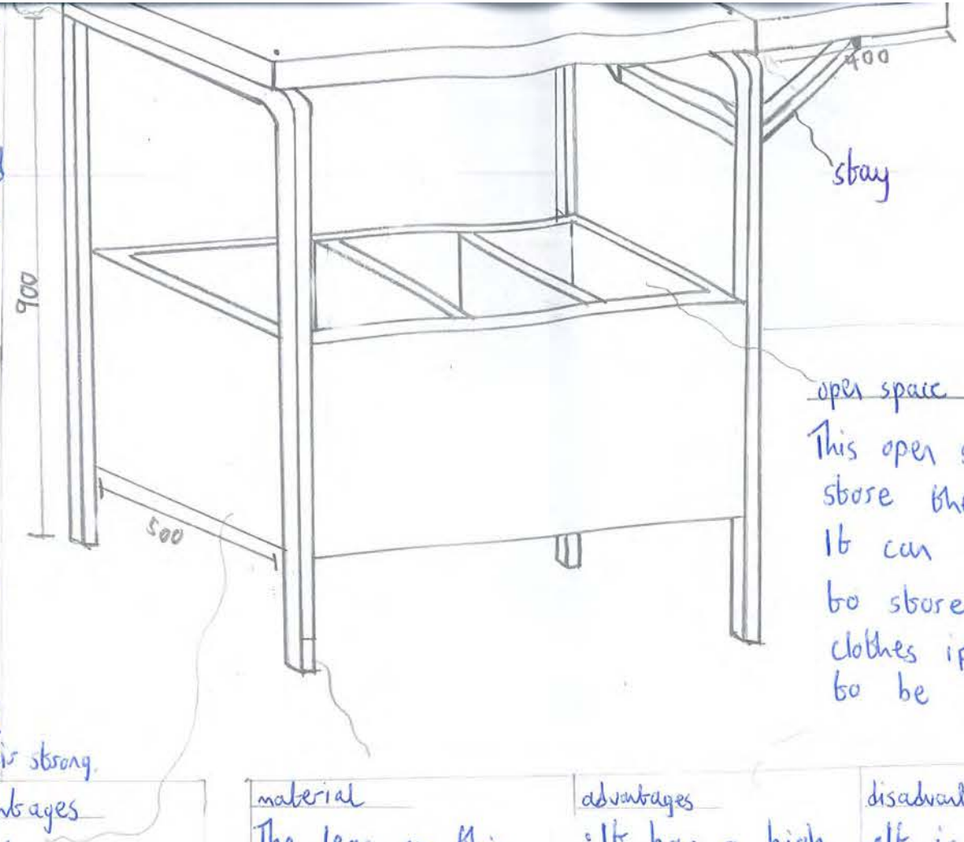

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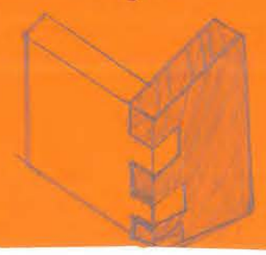
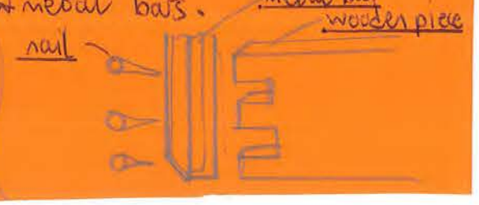
The wooden pieces are joined together using a finger comb joint which is extremely strong when done right



The wooden pieces were nailed to the metal bars. This is what keeps the storage compartments levitated and it makes them stick onto the metal bars.



(1)

Drilling of holes

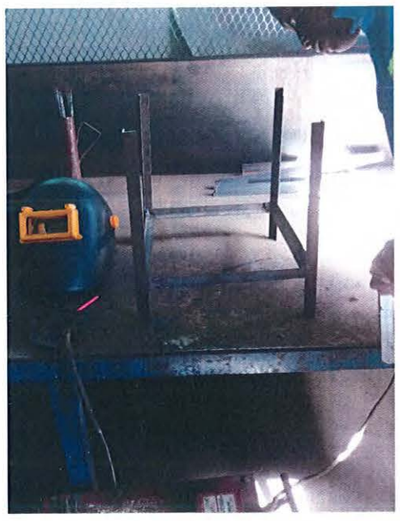
After measuring and cutting out the wood for the storage compartments of the ironing cabinet I drilled holes onto the top the long bars which the board for ironing will rest. The holes are to allow the top board to be removed so laundry is placed in the storage compartments. During the drilling I was wearing ear defenders and googles for protection

(2)

Welding

After ~~the~~ cutting the wood and drilling the holes, I welded the metal bars onto the rest of the metal body which was difficult and hard

(3)



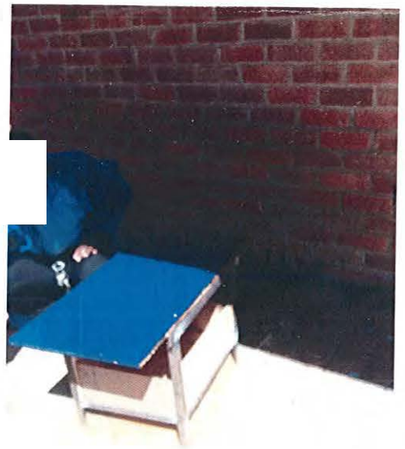
Testing of welding

After I welded everything together I had to check the stability of the device by placing various items on the ironing board and by placing it on various surfaces in order to check the stability

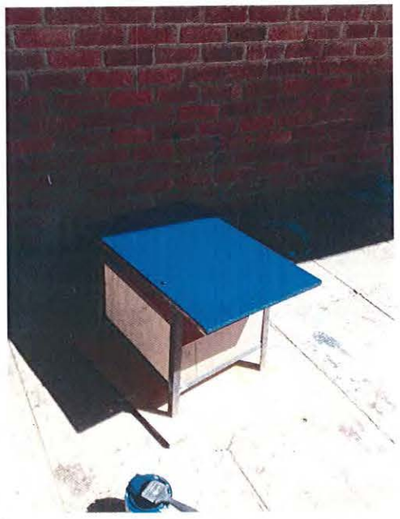
Painting

After checking the stability of the piece or device I decided to paint it dark blue because it is my favourite colour

(4)



(5)



Painting

While I was painting I wore safety googles, gloves and an apron as safety precautions