

A2 Product Design

Context

Problem:
Hanging chairs have become a popular piece of furniture for many outdoor spaces and modern interiors. They give the user the feeling of retreat, somewhere they can curl up in, relax and hide away from everyone for a few hours. Most are made from natural timbers and give a chilled, cocooned vibe as well as reducing the cluttered feel of other furniture sets. Most indoor hanging chairs are made so that you have to attach the chair to the ceiling of a room. This is inconvenient as the user has to attach it to their ceiling securely which will cause damage that will have to be repaired if the chair needs to be taken down/moved. Mobility is also an issue as once the chair is up you can't move it unless you want to re-attach it to another part of the ceiling. This could detract from the usability of the product. Hanging chairs are quite a bulky product so you would need a good size space to put it.

The solution to this problem would be to design a hanging chair to relax in that's attached to a frame rather than the ceiling and has the ability to be made smaller to store i.e. the frame can be retracted and possibly the chair too. The product will then be able to be moved around, it's main function should be comfort over quite a long time period.

Target Market:
My target market is likely to encompass quite a wide range of people. The age range this product is likely to appeal to most is teenagers. Ages 25 to 35 are shown to buy into the furniture industry with 35 to 44 year olds traditionally being the core of the furniture industry. This product has to appeal to parents as most teenagers wouldn't be able to afford to buy the product themselves. Therefore I must consider this within the design to make it suitable to accommodate everyone's needs/wants.

Statistics:

Year	Household expenditure	Household expenditure	Household expenditure
2007	£1,200	£1,200	£1,200
2008	£1,200	£1,200	£1,200
2009	£1,200	£1,200	£1,200
2010	£1,200	£1,200	£1,200
2011	£1,200	£1,200	£1,200
2012	£1,200	£1,200	£1,200
2013	£1,200	£1,200	£1,200
2014	£1,200	£1,200	£1,200
2015	£1,200	£1,200	£1,200
2016	£1,200	£1,200	£1,200
2017	£1,200	£1,200	£1,200
2018	£1,200	£1,200	£1,200
2019	£1,200	£1,200	£1,200
2020	£1,200	£1,200	£1,200
2021	£1,200	£1,200	£1,200
2022	£1,200	£1,200	£1,200
2023	£1,200	£1,200	£1,200
2024	£1,200	£1,200	£1,200

Studies show that in 2007 the country spent £750 million every week on carpets, sofas, garden furniture and other "recreative goods". Half a century ago the average family spent £1.20 or 8.7 per cent of weekly spend - on housing costs. In 2008 this shot up to £85.40 - or 19 per cent of weekly spend.

Clearly from this we can conclude that creating an indoor hanging chair is going to be a fairly affluent niche in the furniture market as people are constantly trying to spend money to improve their homes.

Possible Materials:

- Suitable for chair frame:
 - Ash: A tough hardwood, good for bending
 - Elm: Excellent bending qualities, hard to source and expensive
 - Beech: Hardwood, bends easily, inexpensive, good to work, heavy
 - Birch: Hardwood, moderately expensive, strong and moderately expensive
 - Oak: Hardwood, aesthetically pleasing, strong and moderately expensive
 - Pine: Softwood, close grain, inexpensive
 - Poplar: Hardwood, soft, light, inexpensive, easy to work, stains well
 - Redwood: Softwood, quite hard, easy to work, quite expensive
 - Sycamore: Hardwood, resistant to splitting, easy to work, moderate price
- Metals for frame:
 - Aluminum
 - Zinc (galvanized)
 - Stainless steel
 - Steel
- Plastics for the chair:
 - Acrylic
 - PVC
- Fabric for the seat:
 - Wool
 - Cotton
 - Linon
 - Nylon
 - Silk

Factors affecting design:

Health and Safety: The product needs to have a lot of consideration put into the size and weight of the chair and the shape and style of the frame so that it is strong enough to support the weight of the chair, the weight of an average mid/teen, and remain strong when the chair is swinging.

Anthropometrics and Ergonomics: This design will revolve largely around average human measurements (anthropometrics) and making something suitable for the widest range of people possible. The design will also be affected by thinking about the interactions between the product and the people who will be using it (ergonomics).

Aesthetics: This is also a huge factor in the design as the chair will still need to look good as the customer will not be interested in purchasing it.

Sustainability: As people are much more aware of being environmentally friendly, it should be designed so that any broken parts can be replaced.

Brief objectives:
To design and make a relaxing hanging chair that has a self supporting framework, that does not require the user to attach permanently to their ceiling or wall. The chair will be aimed at a target audience of males and females between the ages of 12-45. It should be able to be hidden away/disassembled so it can be stored in a smaller form. The product should be of high quality; it must be safe which includes being able to support the weight of one person; it must be able to accommodate my target market and be aesthetically pleasing.

Initial Ideas

Introduction:
These are the chair and frame designs that have come up with. I have a range of different designs that have been inspired from different things on my mood board. From these designs my client and I will pick a particular design and develop it further.

Working Drawings: Final Design

Introduction:
These are my final design drawings showing in detail fittings and how the chair will look when it's finished.

My Client's Feedback: "I really like the design, I think it meets all my requirements. Although the frame is quite large when up, it has been designed to be disassembled which is really important for me. I love the chair design and am impressed with the overall look of the product."

Plan of Manufacture: Week Seven – Eight

Introduction:
This is my diary of manufacture for my frame.

I copied the layout of the frame from Google search and used 2D design so that I could print the frame off in A3 sheets. I then laid out the sheets and stuck them together using tape.

After the frame template was finished, I used rolls of tracing paper and traced the outline of the frame pieces so that I could cut out pieces to stick on the ply. Once all the pieces were cut out, I arranged the pieces on the material so that they would all fit on one sheet and minimise the amount of waste material.

After I had found the best way to place the pieces, I used spray mount to stick them down to the ply.

I then had to cut the pieces out so I used a jigsaw. I changed the wood over two benches so that there was a space in-between to allow room for the frame down to the ply.

Once all the pieces had been cut out, I used an electric sander on the edges of the pieces to remove any sharp edges and marks. I then used a sanding block to finish with grade 120 sanding paper to get a smooth curve. I had someone holding the end of the piece to make sure it stayed level.

After each of the steps had been completed, I used an electric corner on the edge of the pieces to remove any sharp edges and marks. I then used a sanding block to finish with grade 120 sanding paper to get a smooth curve.

