

A collage of various design technology tools arranged around the central text. The tools include a soldering iron with a red handle and black cord, a compass with a green handle, a claw hammer with a wooden handle, a semi-circular protractor with a white face and black markings, a red and blue eraser, a hand saw with a red frame and grey handle, a coping saw with a wooden handle, a square with a wooden handle and metal blade, a metal ruler with black markings, a hand plane with a blue body and wooden handle, a scroll saw with a green frame and wooden handle, a pair of orange-handled scissors, a red-handled screwdriver, a yellow pencil, and a wooden mallet. The tools are set against a white background with a subtle grid pattern.

Improve your maths

Find new skills

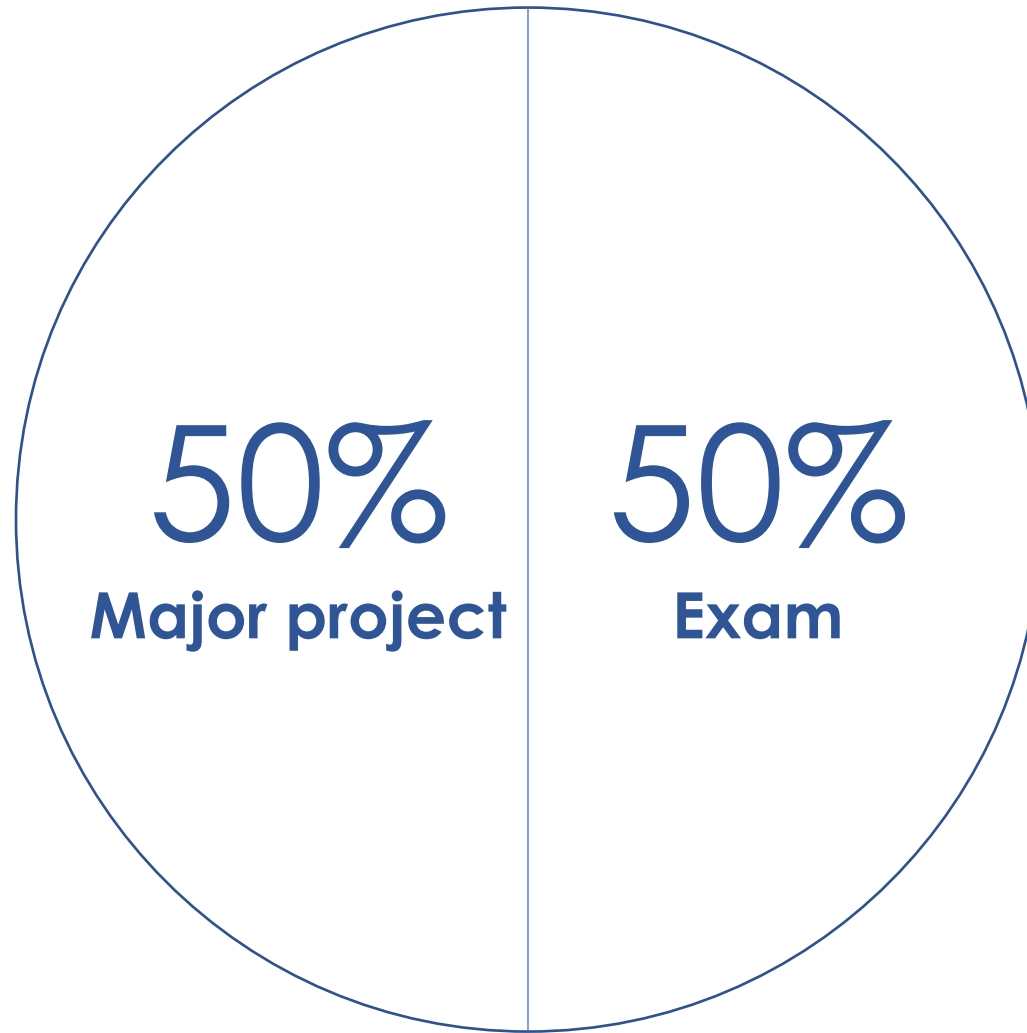
Explore creative ideas

Develop problem solving

Work as a team

Learn to communicate

How is the course structured and graded?



Example project
In progress 2021

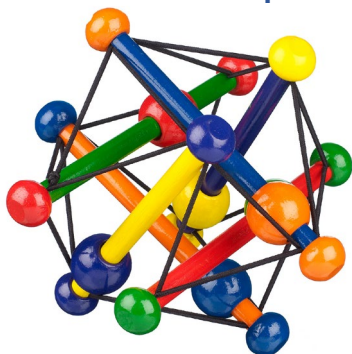
1. Design Brief and Task analysis

I intend to design a **learning aid** for a child aged 3-6 years old. It will have an emphasis on craftsmanship and **sustainable design**. The function is to encourage learning through **play** and develop hand to eye coordination. It will be a **one-off** manufacture but designed to be recreated for **batch/mass** production.



2. Initial research

This initial research is aimed at finding out price and materials. I intend to use several ideas but combining them into something that is more mobile that could help with learning to walk. I appreciate the **simplicity** in the designs and the use of mainly primary colours. Most of the manufacturing should be straight forward in terms of both one-off and batch production.



Manhattan SKWISH
£14
Wood and bungy material



Chad Valley wooden tool box
£8
Beech wood



MURO Modular CUBE Massive Pack
£250



Melissa & Doug Classic Wooden Toy
£9
Birch plywood



Hape E1801 learning toy, Skill Game
£12
Pine and polymer tube



Techecho magnetic blocks
£41
Beech and birchwood



Early learning hammer bench
£20
Ash and beech wood



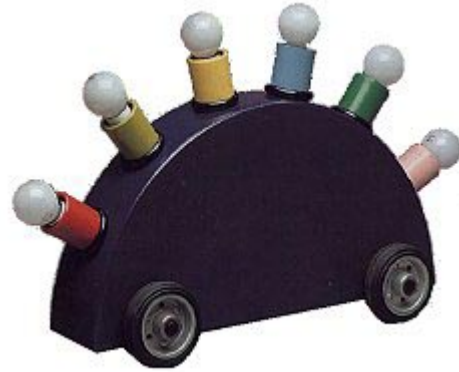
Russian Building blocks
£14
Birch wood



Brico Building set
£149
Beech wood

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2b. The work of others – The Memphis group



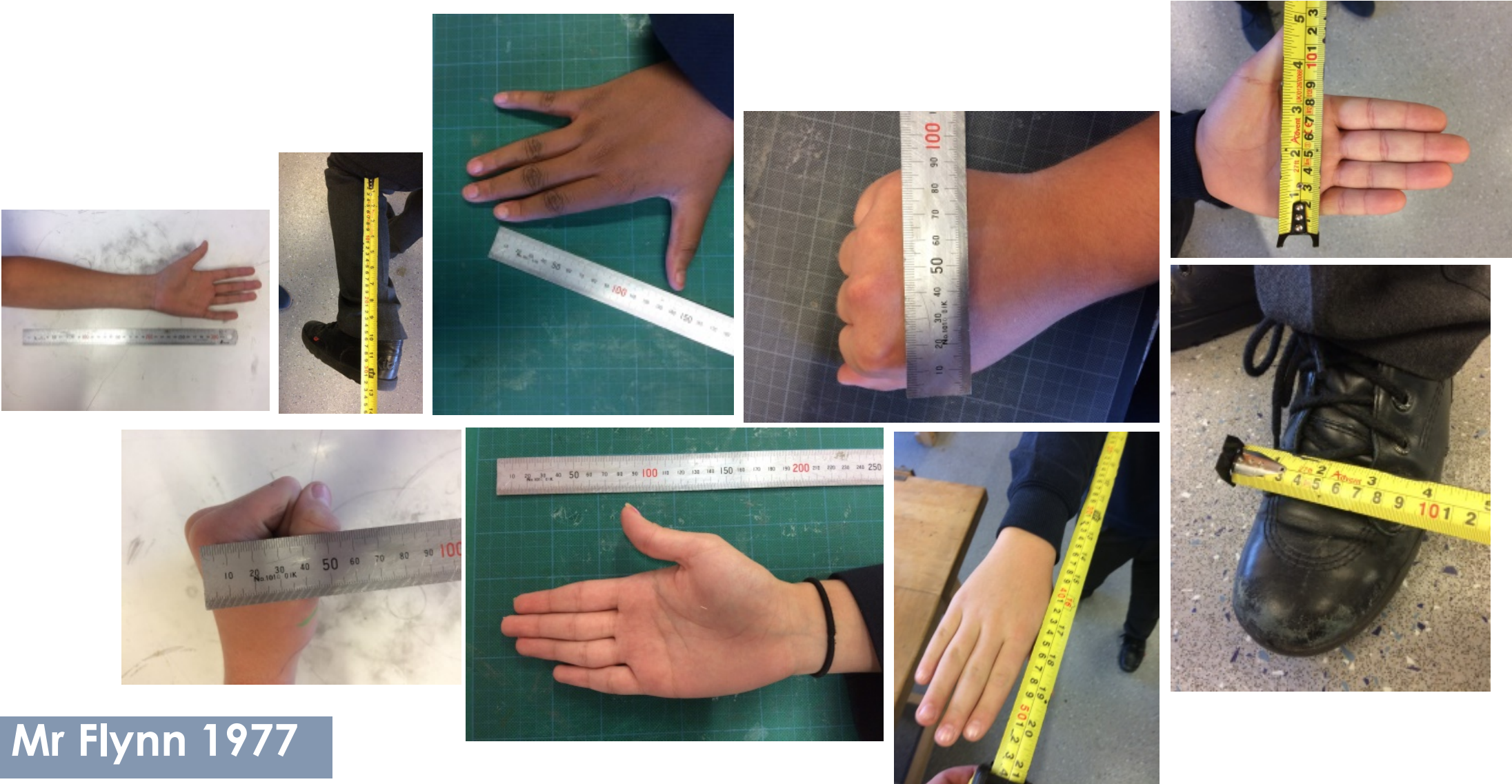
Funky, colourful, challenging, weird, different, sculptural, fun! There are many ways to describe the Memphis group but my reason is because how it fits in with children and play! Because of the bright colour and simply geometry, Memphis is perfect as a group to influence the building of a child's toy. This page will give my client an idea of what I intend to build.



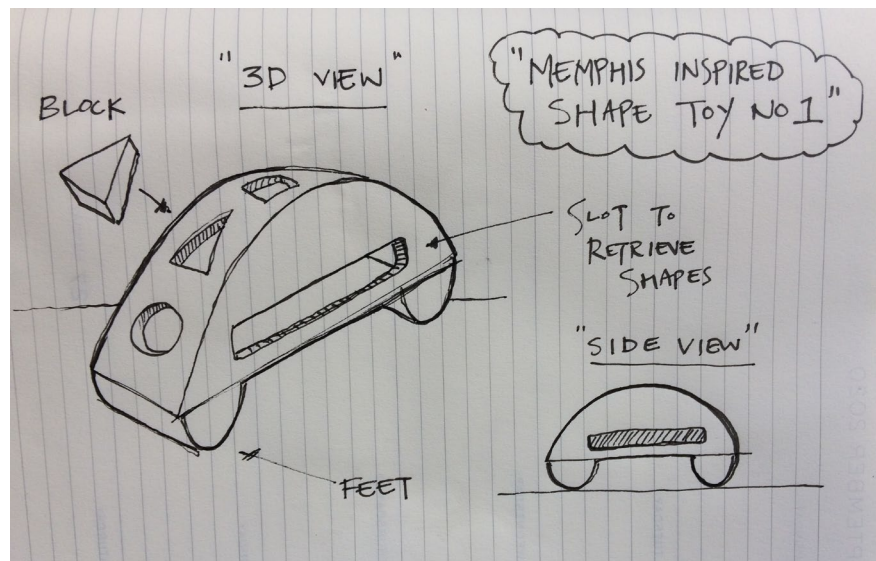
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3. Anthropometric data

Anthropometric data. I visited a local primary school, and with permission from some parents that I know and the permission of the staff I have measured several body parts of an age range that I am aiming the design at – the middle school pupil year six to fifteen. Some measurements are more critical than others at this moment – length of forearm and distance from chair to desk.

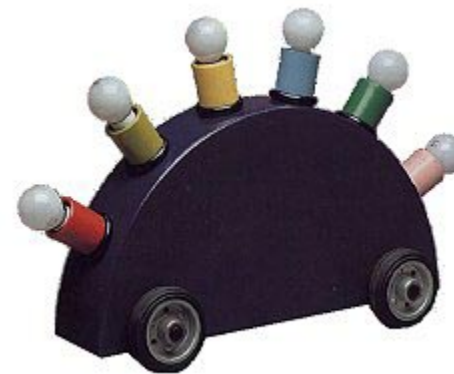


4. Initial sketch ideas



My first step was to roughly sketch out the design to show my client. They were impressed with the design and thought that it was suitable due to how easy and safe it was to use.

This is my first idea based on Martine Bedin's 1908's "Super lamp" design. I have used the basic shape to create a simple, fun shape toy. My next step is to model it to see how it functions. I will probably use soft materials like foam and card just to get an idea of form, structure and weight.

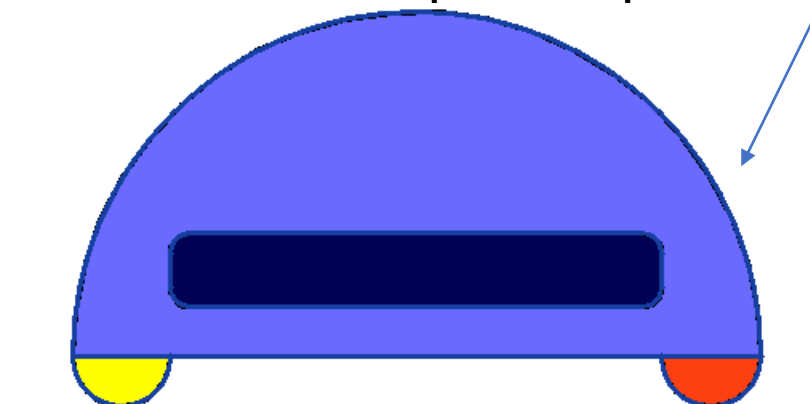


The shapes will be colour coded to make the learning tasks easier.

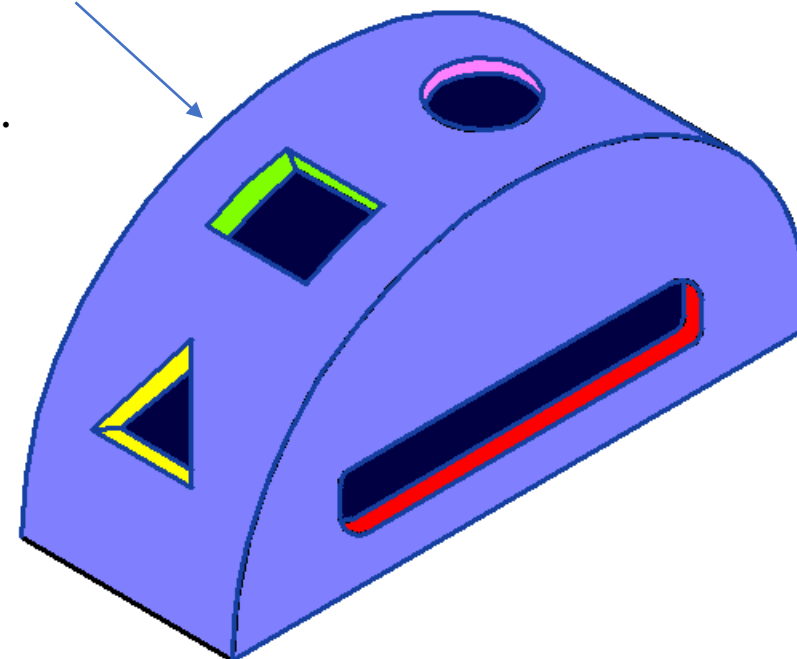
This slot will make it easy to extract the shapes and repeat the learning.



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I developed the sketch using 2D Design for a better level of better presentation.



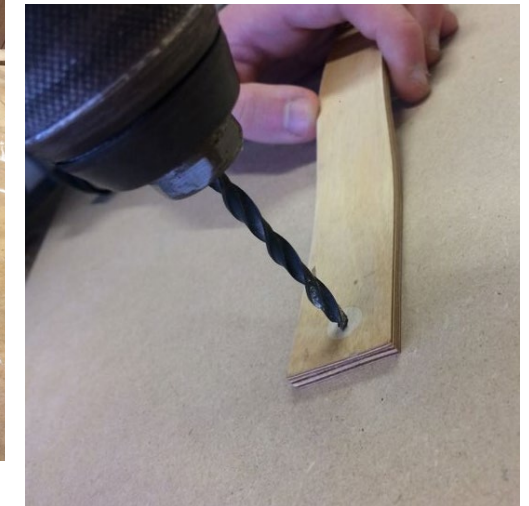
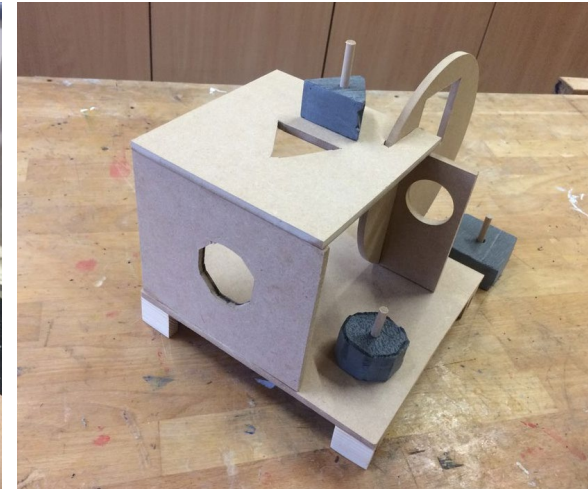
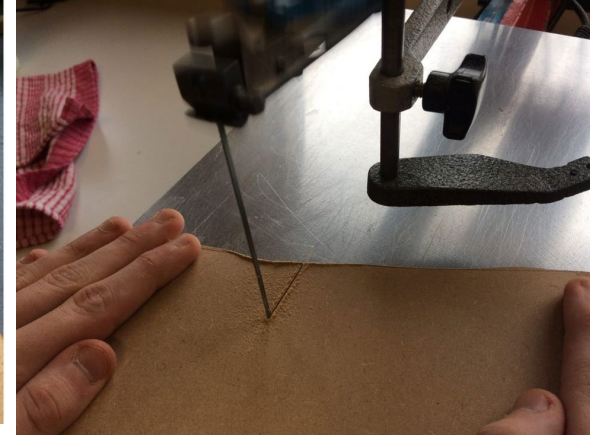
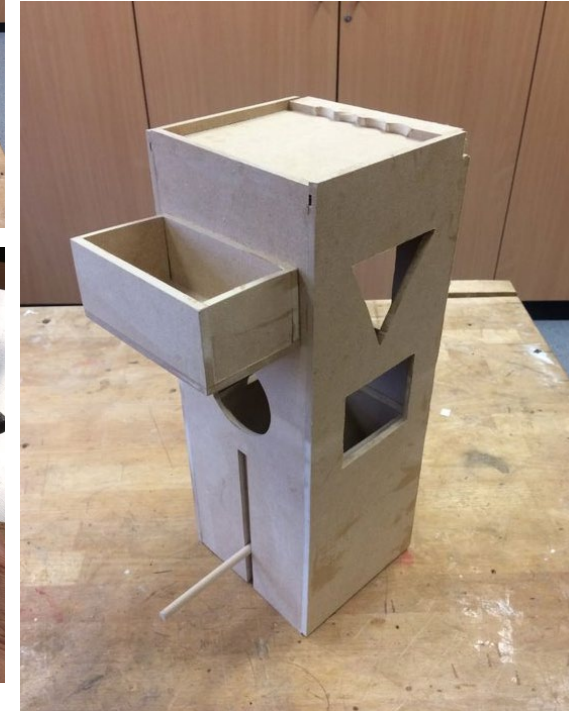
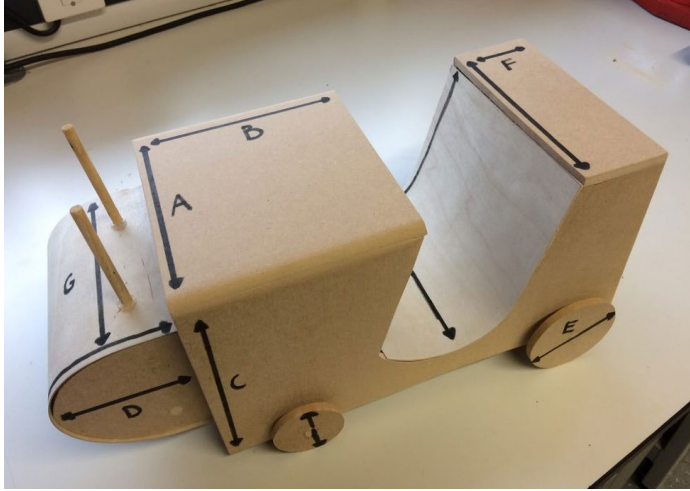
5. Sketch model

This is my first attempt at physically modelling my design from page 6. The material used is 3mm corrugated card, cut using a laser cutter. The process for designing and manufacturing was quick – all done in around 30-40 minutes. The pattern was drawn up using 2D Design at around 1:4 scale.



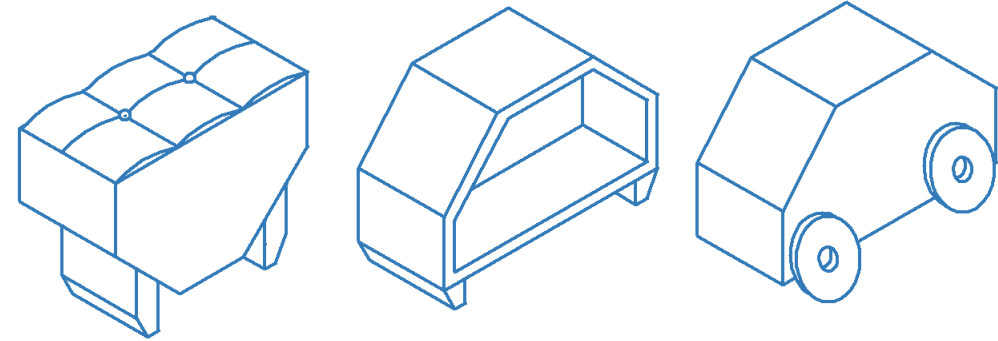
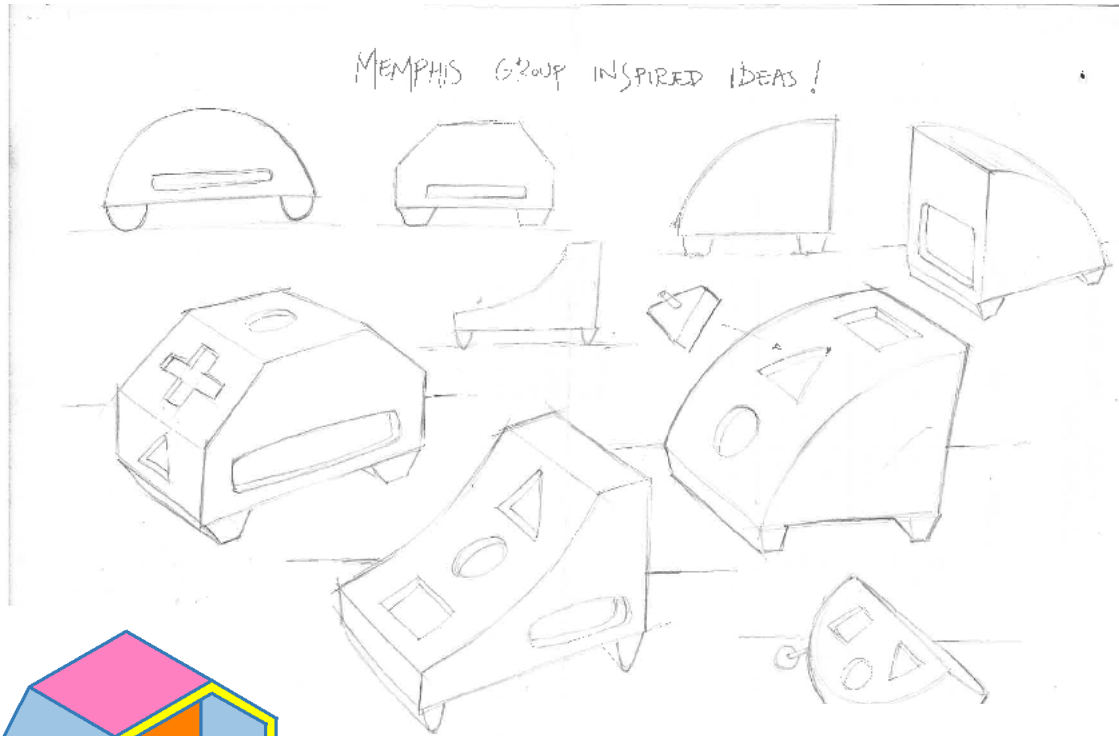
Issues: The card is hard to judge in terms of tolerances and it was difficult to fit together. The laser also creates a lot of soot as it burns through the material, which gets all over your hands and the surface of the card – it is not an attractive presentation piece. This is not effective enough at the moment to show my client so I will try another process

Year 11 Model making

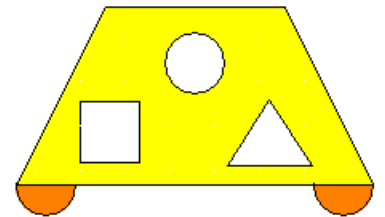
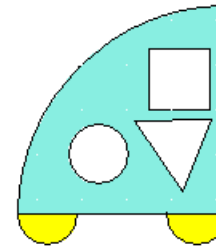
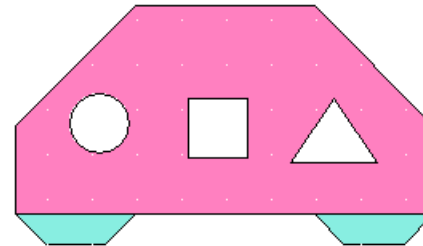
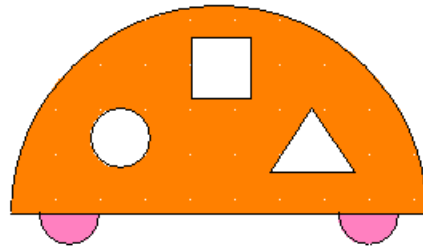
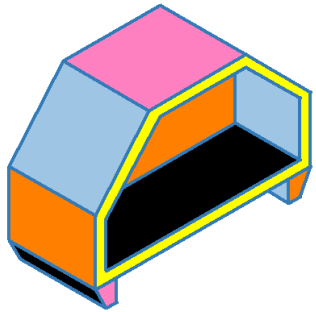


6. Design development

These are my second round of ideas based on my original sketch. Martine Bedin's 1908's "Super lamp" is still the inspiration but I have change the shape so it may be easier to manufacture.



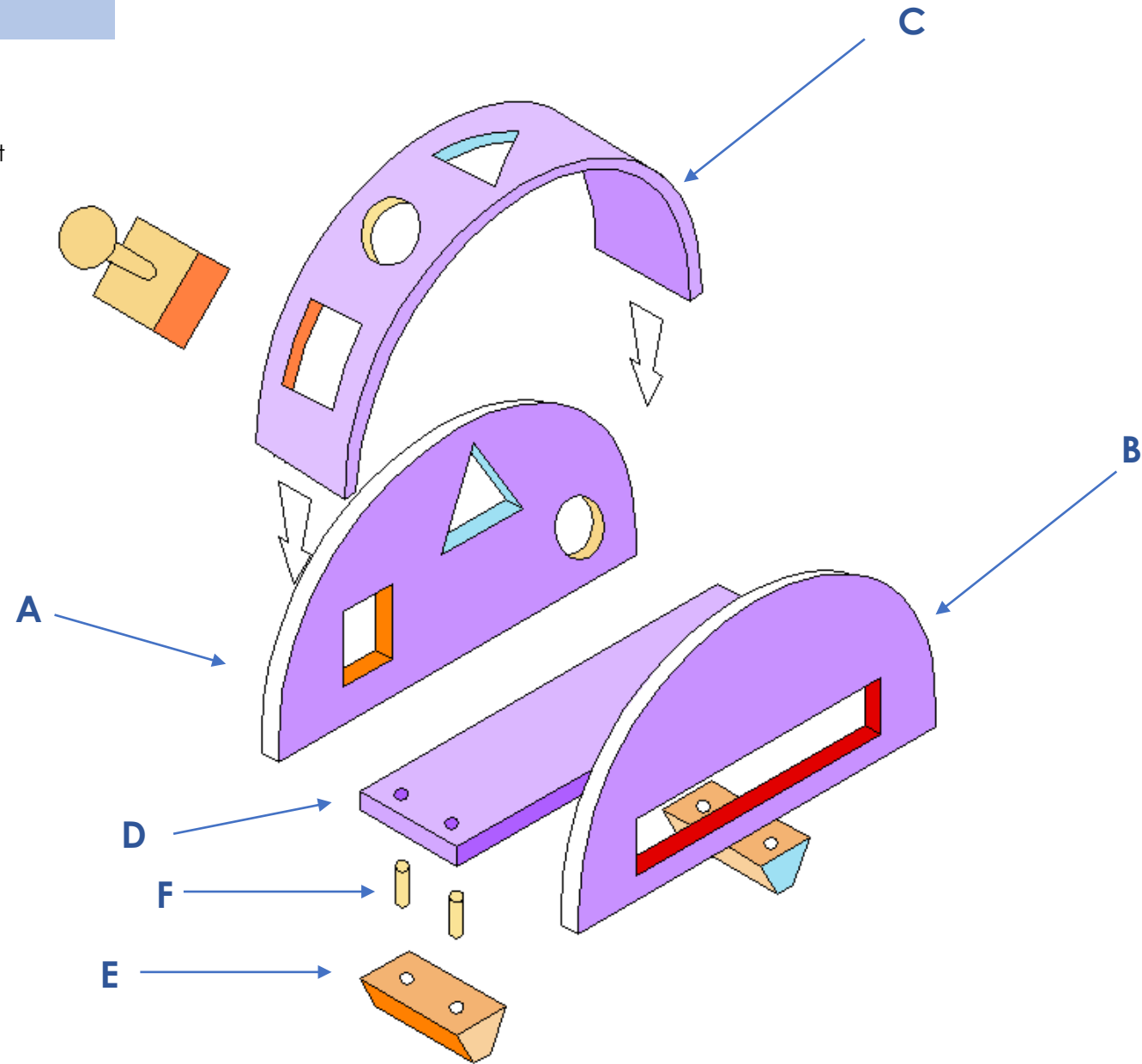
Below are my developed ideas using basic geometric shapes and bold colours. I have kept with the style of Memphis as it is so suitable for children. The ideas have been drawn up using 2D Design and I will now model 2 or 3 using high density foam.



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7. Exploded view

This view shows how all the components will be manufactured for the second prototype. I intend to use 6mm MDF as it is a reliable yet inexpensive. It is easy to cut and shape and can be recycled easily.



A: Side (left)
B: Side (Right)
C: Lid
D: Base
E: Foot
F: Pin

8. Component cutting list

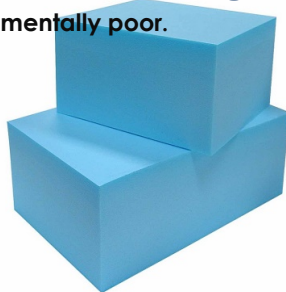
At this stage it is time to consult with my client about materials. It is my role as designer to explain and recommend the differences in suitable materials in terms of their **properties** via cost. We discussed what type of **durability** tests might be appropriate as well as how to design in repairable features if necessary. I have also included a few visuals from the catalogues to help my client get a further idea of what was what.



HDF / Styrofoam

PRO- Easy to shape – good for fast modelling.

CON- Very soft / weak, environmentally poor.



Corrugated card

PRO- Rigid, cheap, recyclable

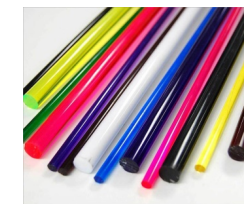
CON- Not durable



Acrylic rod/sheet:

PRO- Colourful, easy to clean.

CON- Expensive, brittle.



Plywood:

PRO- Excellent strength and surface finish.

CON- Splinters easily along grain edge.



PVA Glue

PRO- Very strong and water based

CON- Expensive



Jelutong

PRO- Very strong and Light-weight

CON- Only available in small dimensions



High Impact polystyrene

PRO- easy to mould, rigid

CON- not strong



Danish oil

PRO- Surface protector

CON- Expensive



MDF

PRO- Easy to shape – good for fast modelling.

CON- Very soft / weak, environmentally poor.

Dowel

PRO- Available in various dimensions.

CON- Very expensive.



Metal hinge

PRO- Allows doors to open.

CON- Very expensive.



Pine

PRO- Very strong and flexible

CON- Poor wood grain – soft surface



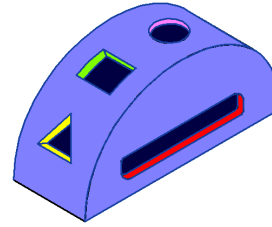
Acrylic paint

PRO- child safe.

CON- Hard to apply evenly.

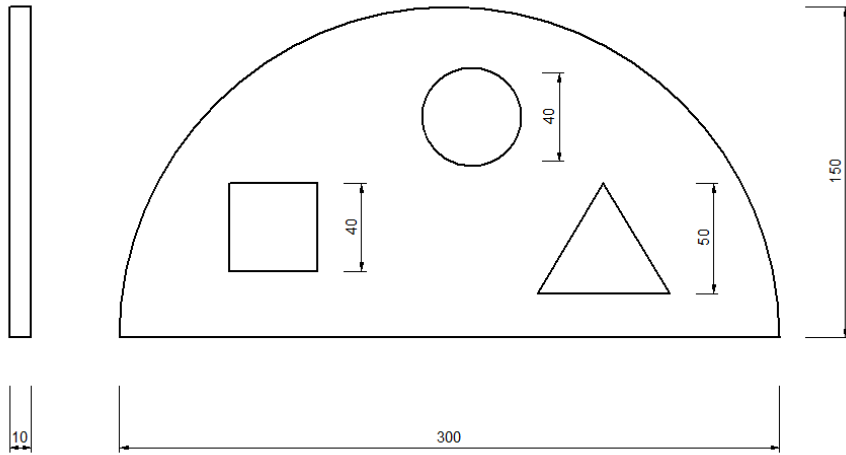


9. 3D Development



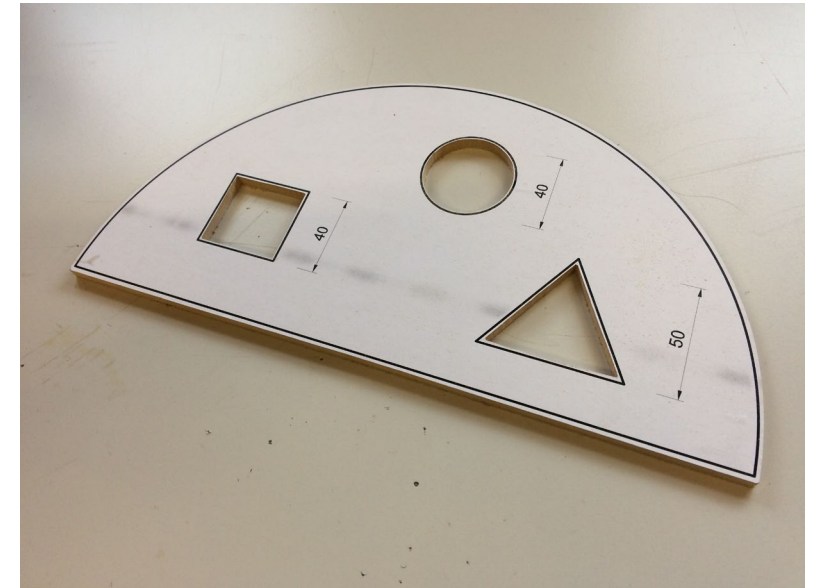
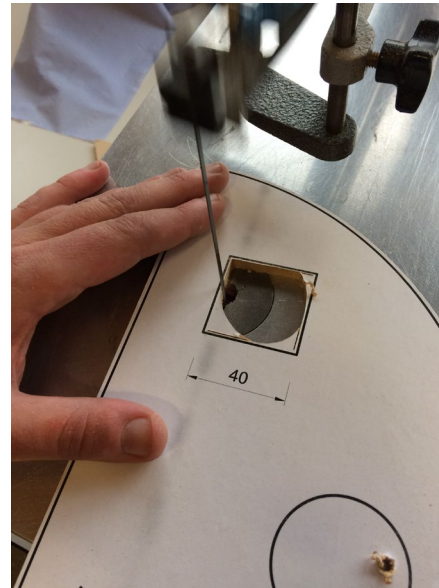
Front view

Side view



I started manufacture by choosing the side panels as these will be the easiest parts to build and will give me a sense of scale. The pattern was drawn up using **2D Design** as it is quick and accurate to use. This was then printed on A3 paper.

The paper was applied to **6mm MDF** using a glue stick. This is a perfect modelling material as it has enough rigidity to be cut into complex shapes and be glued and tested. The shapes were drilled so that a **fret saw blade** could be inserted and cut from the inside. The edges were quickly smoothed using **240 grit glass paper**. The manufacturing time was 30 minutes.



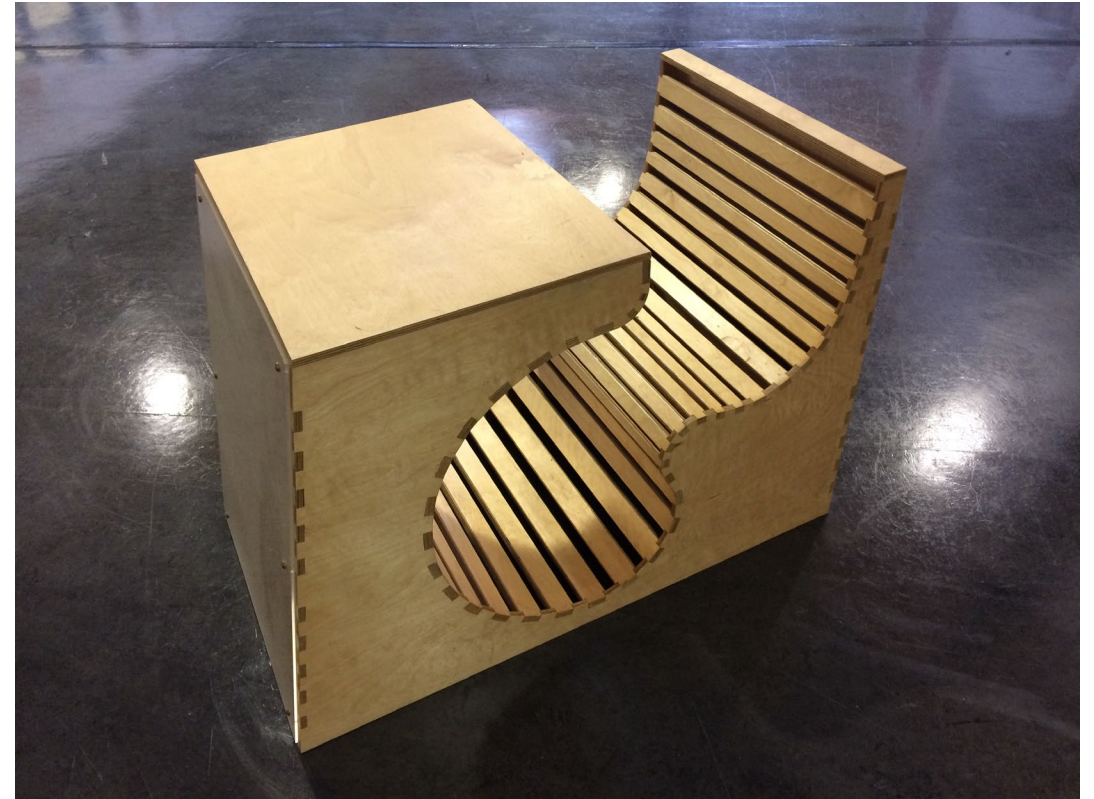
Example projects

Past Masters

Example 1: Child's writing desk



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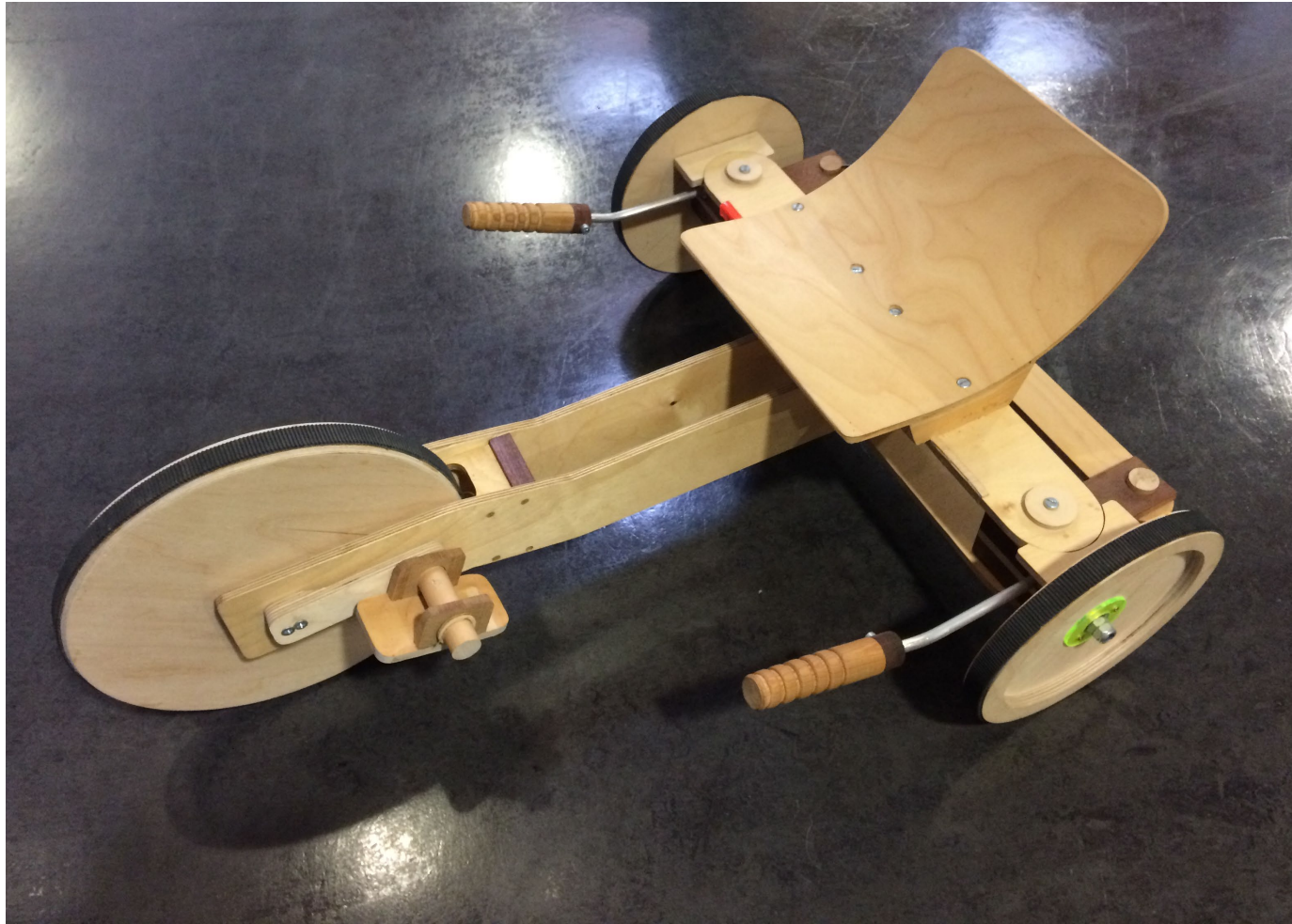
Example 2: Bent plywood chair



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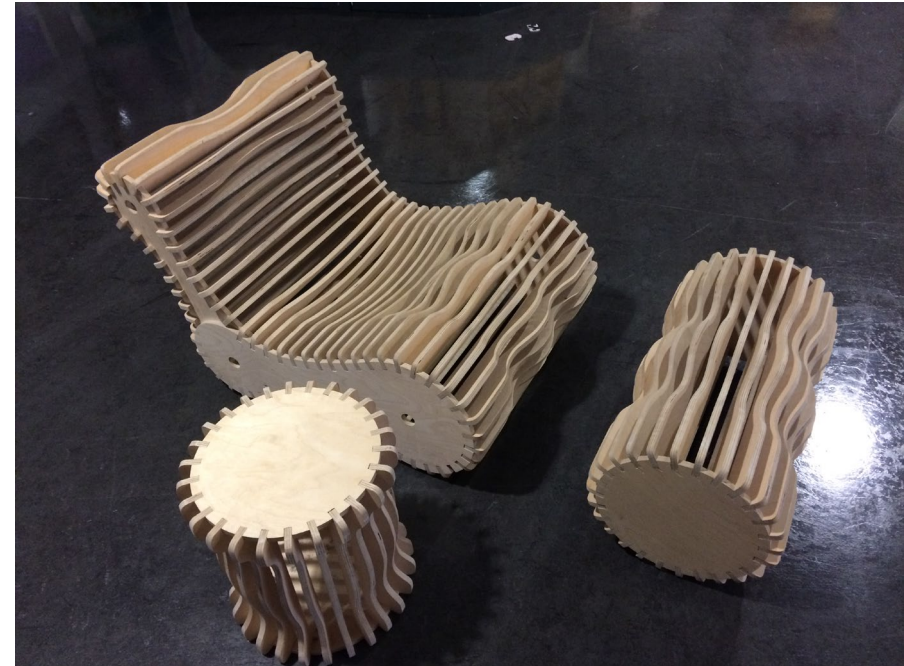
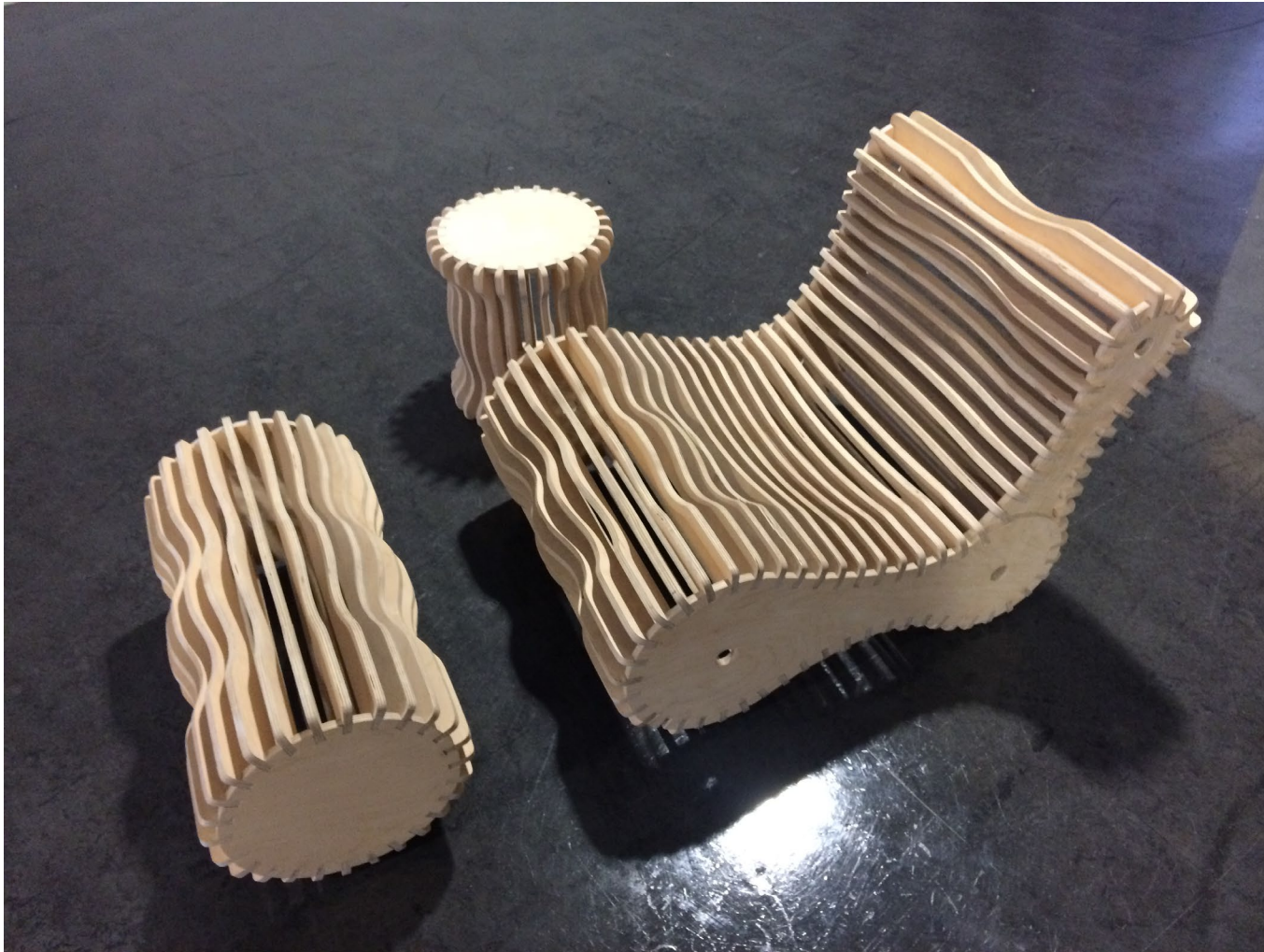
Example 3: Child's tricycle



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Example 4: Gaming chair



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