

RUI'S

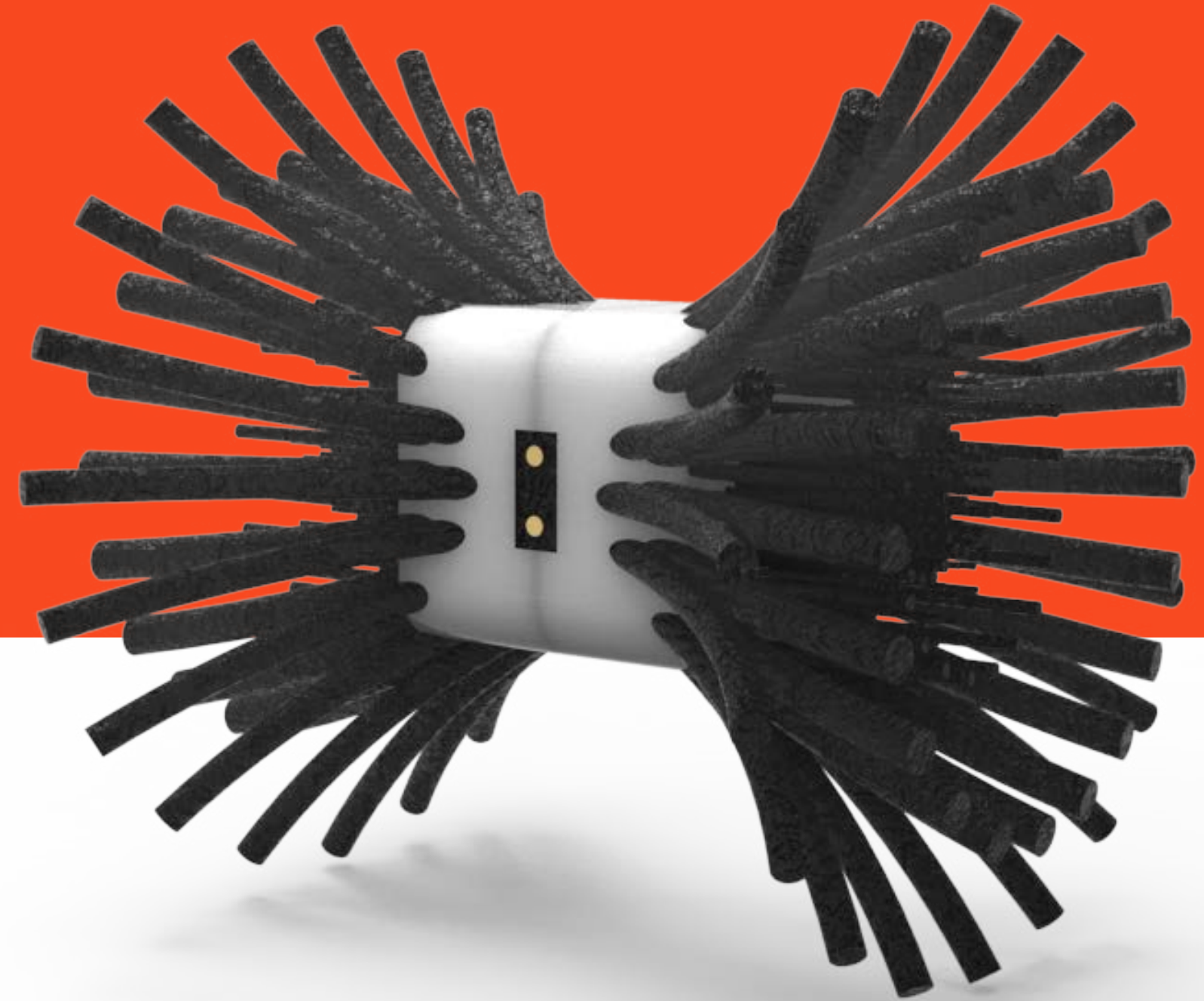
PORTFOLIO

01. E-BRUSH

This is an **artificial intelligence toothbrush**.

When putting it in user's mouth, this toothbrush will automatically start brushing and detecting his/her teeth.

The product comes with a charging case, so users can brush their teeth anytime, anywhere.



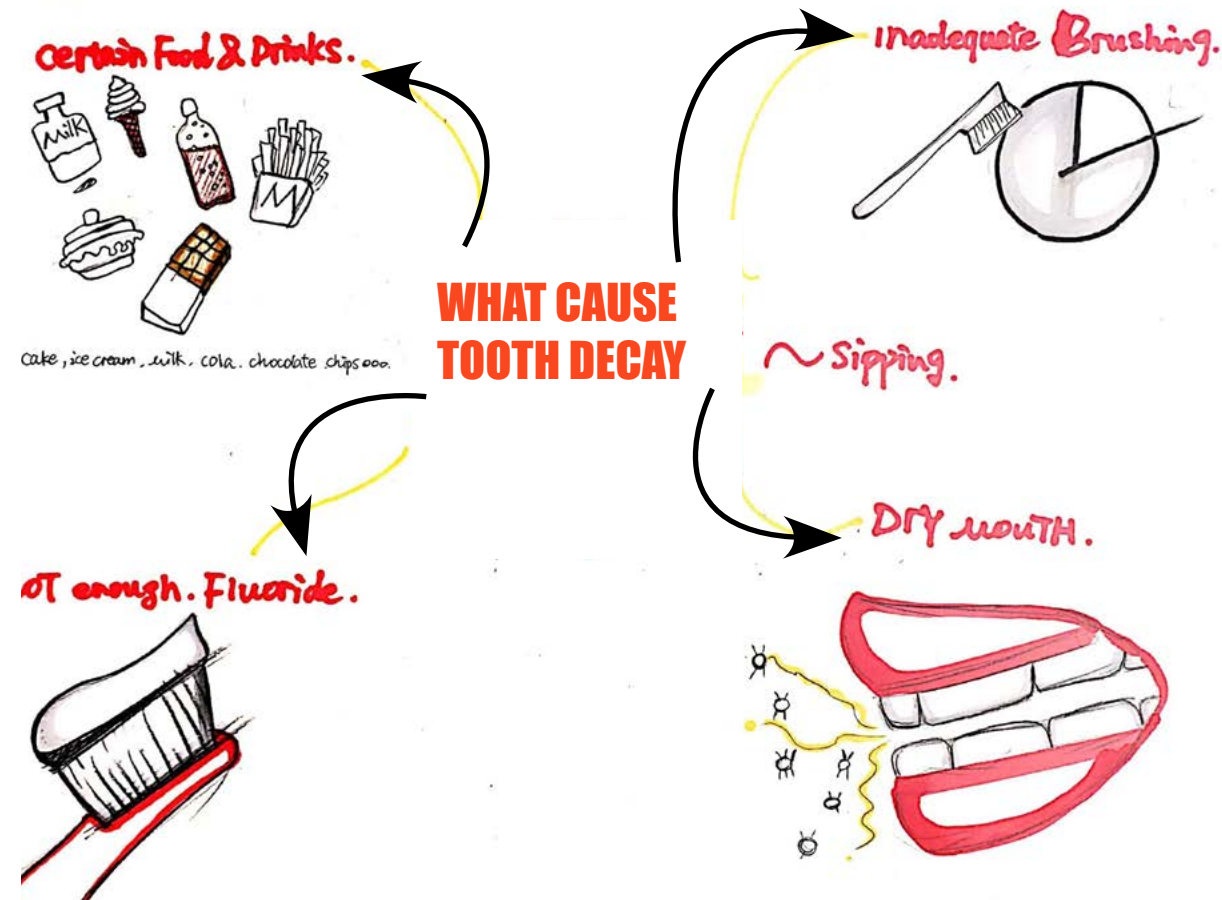
BACKGROUND

In August 2019, since I didn't brush my teeth carefully, one of my molars was decayed. The medical device punctured the nerves made my pain unbearable during treatment. After that, I started research on different kinds of tooth decay and factors that cause these tooth decay.

Tooth decay



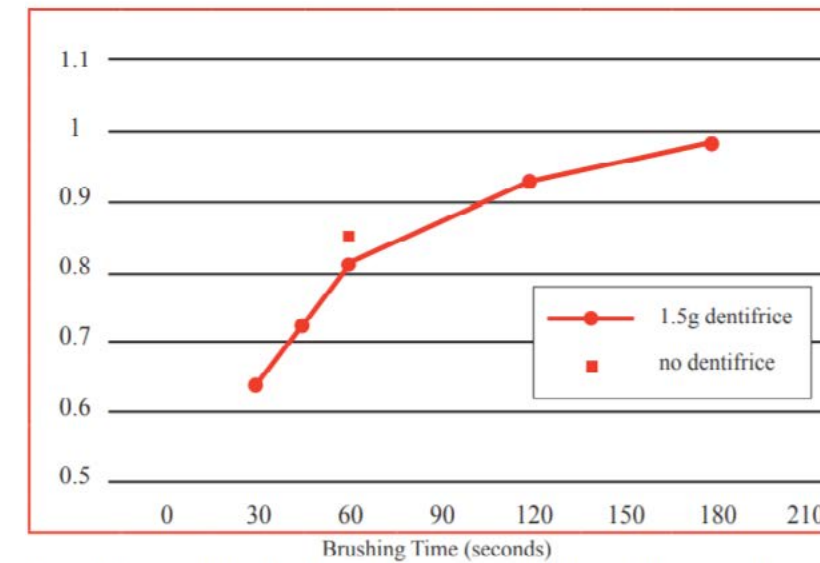
Different tooth decay human faces today.



Inadequate brushing

"The general consensus amongst oral health care professionals is that individuals should spend **at least 2 minutes** brushing their teeth with an effective technique **at least twice a day**, though However, most estimates of actual brushing time vary between just over **30 seconds to just over 60 seconds.**"

- Research-The Effect of Brushing Time and Dentifrice on Dental Plaque Removal in vivo
Andrew Gallagher, DMD; Joseph Sowinski, DDS; James Bowman, MS; Kathy Barrett;Barrett; Shirley Lowe; Kartik Patel, PhD; Mary Lynn Bosma, DDS; Jonathan E Creeth, PhD



This table shows the plaque removed against brushing time.

At 60s, brushing **without dentifrice** has great effect than that with 1.5g dentifrice.

Figure 1. The effect of brushing time and presence of dentifrice on plaque removal, mean \pm between subject s.e. (note the 'no dentifrice-60 seconds' value is slightly displaced on the

Conclusion

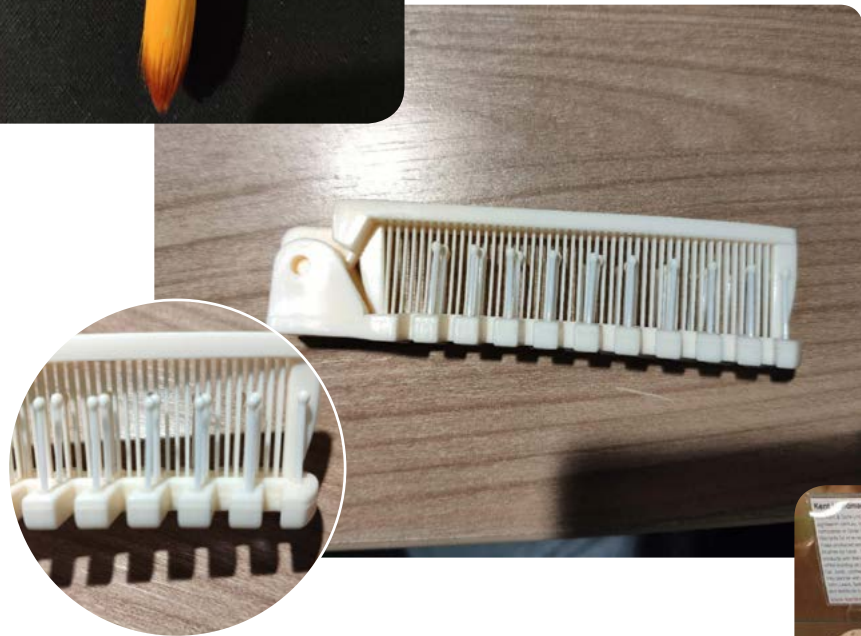
01. Brushing **2 minutes** each time.
02. Brushing at least **2 times** per day.
03. With **adequate dentifrice.**

RESEARCH

PRIMARY RESEARCH



01. Whiting brush has the similar shape with tooth brush. I realized if the fur "open", lines created will be **irregular and rough**. Similarly, the job of toothbrush is cleaning, so I think the "**open structure**" is better for a toothbrush.



02. This is a part of my **comb**.

The large bristles with small ball can clean the deeply in hair. So, **different sizes of bristles** are required to clean teeth.

03. This is **wooden brush** in the library. Normally, brush only have one side. I realized the **double sides tooth brush** is better since we have upper teeth and down teeth.



SECONDARY RESEARCH



01. SUSTAINABLE TOOTHBRUSH

Designer :Alexandre Touquet.

It is a Changeable toothbrush

"Brush" and a "holder" can be **separated**. I think bravely, why not **delete "holder" and only remain "brush"** ?

People can rotate holder to brush every gap of teeth. **AI tech** can find dirt itself.



02. ACUO gum

Designer: nendo

Gum can clean teeth by **stick the dirt**.

People can eat gum whatever the place and time because **steps of "opening ,picking, eating" is quite user friendly**. However, brushing tooth can not because of **dentifrice**.

I want to make tooth brush easy to use like eating gum through my design.

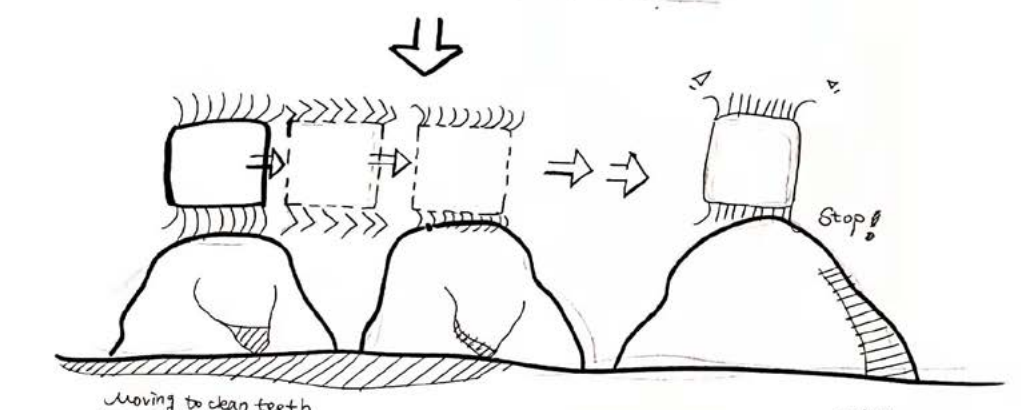
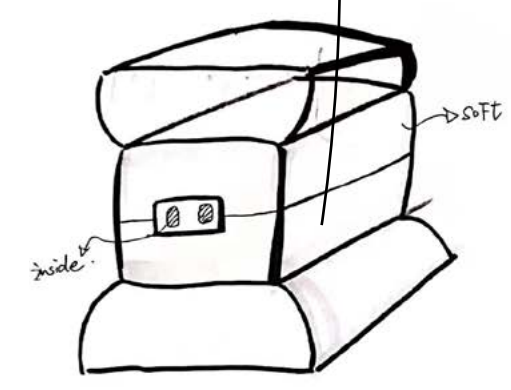
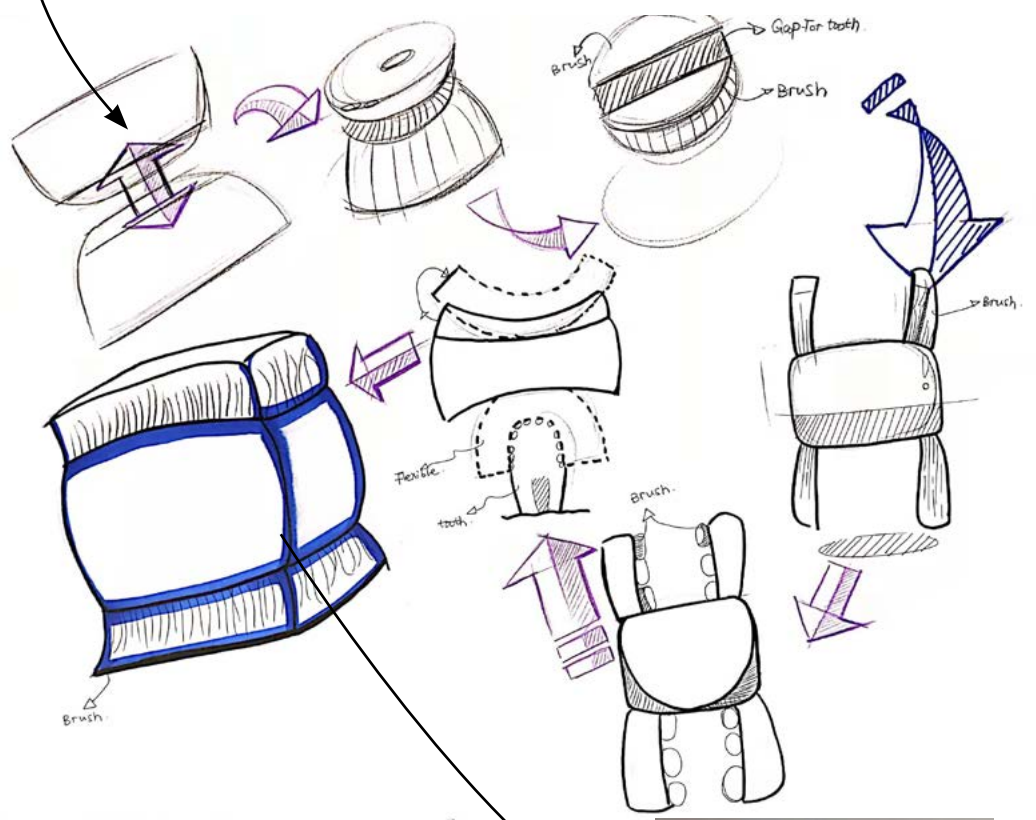
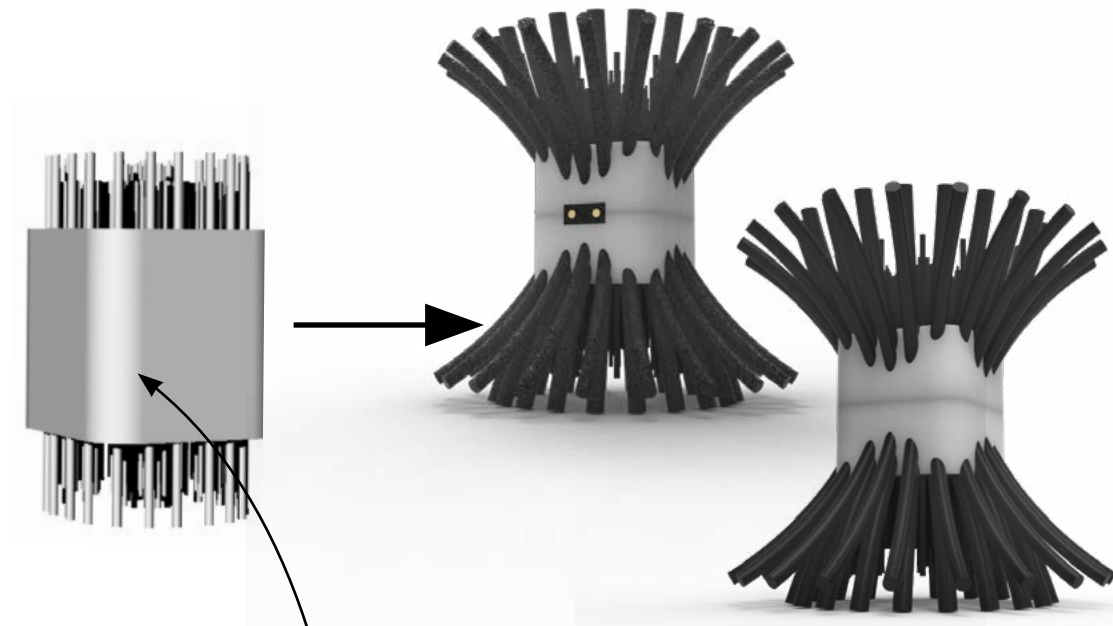
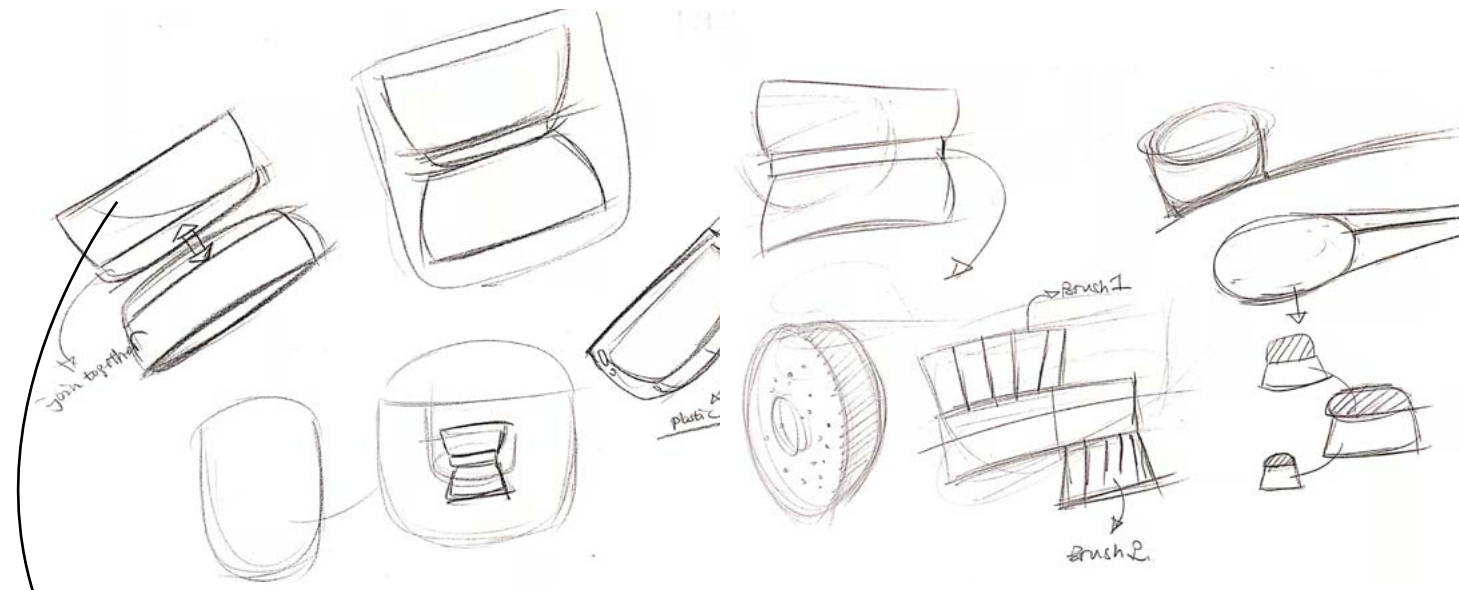


IDEA DEVELOPMENT

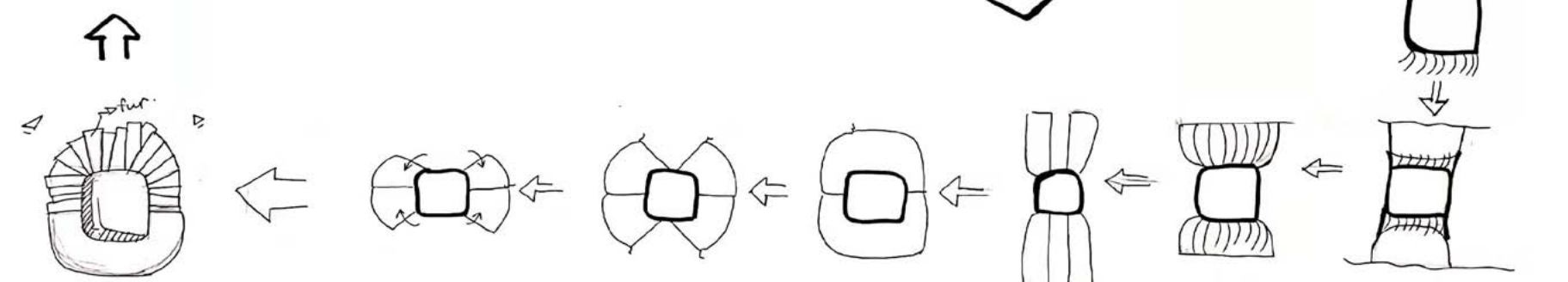
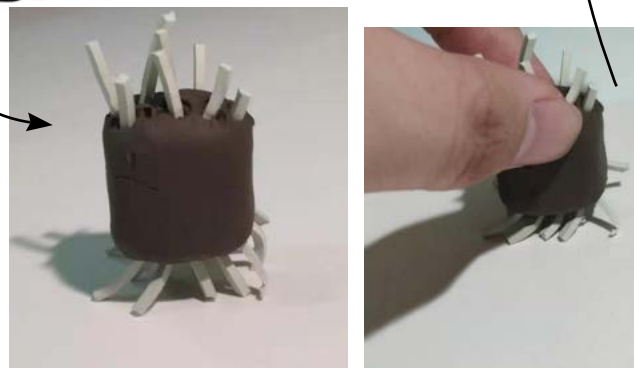
This section shows **initial ideas** and the **development of chosen idea**.

I made **testing model** to help me discover potential problems of my idea.

Finally, I **modelled and rendering by Rhino and keyshot** to improve this idea further.

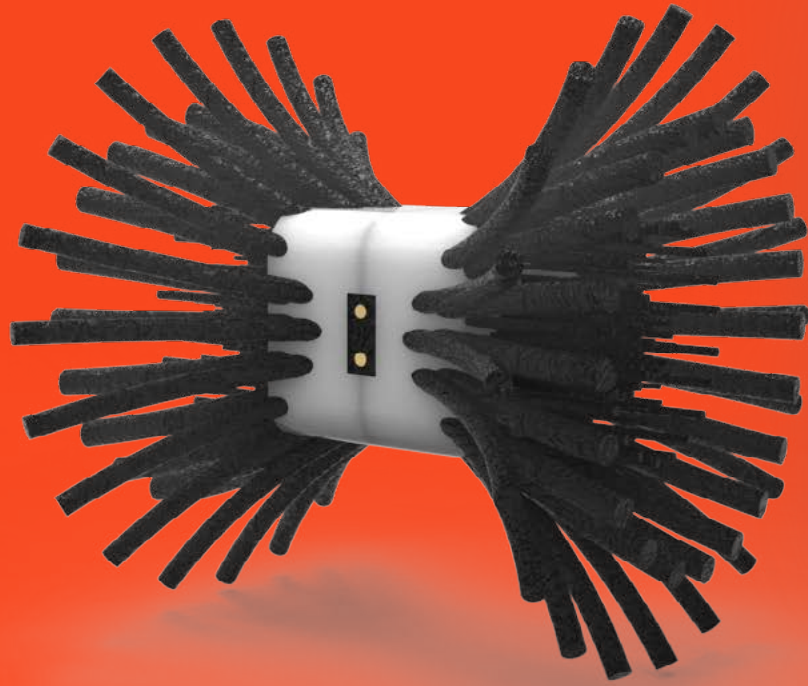


TESTING MODEL



OUTCOMES

E-BRUSH



CHARGING BOX



The toothbrush has **double sides** so it can **clean upper and inferior teeth at the same time**. **Brushing 2minutes each time**.

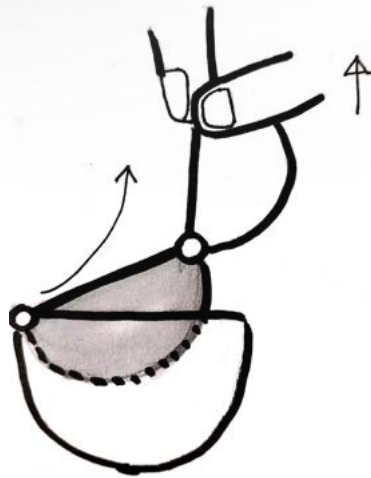
The white part is **soft plastic** so users can **bite it during brushing**.

Toothbrush can **charge in charging box**.

Modeled by Rhino,
Rendering by Keyshot.

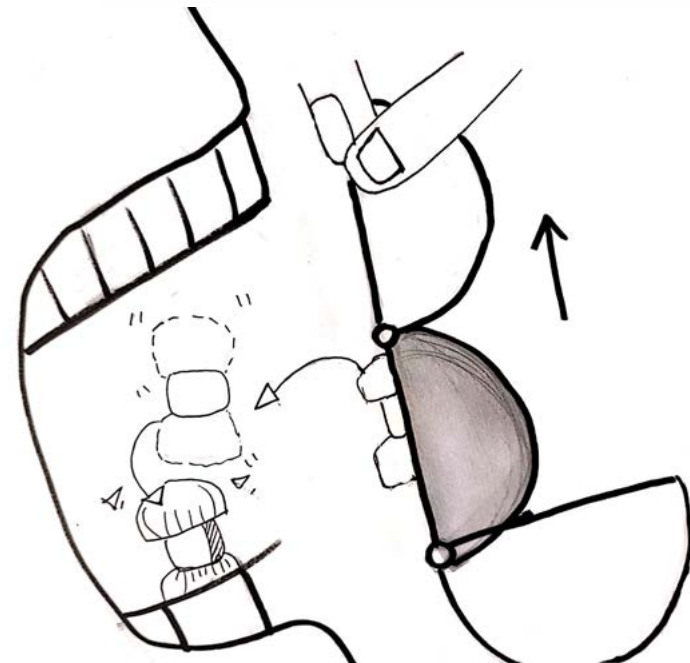


01. Bring up the lid



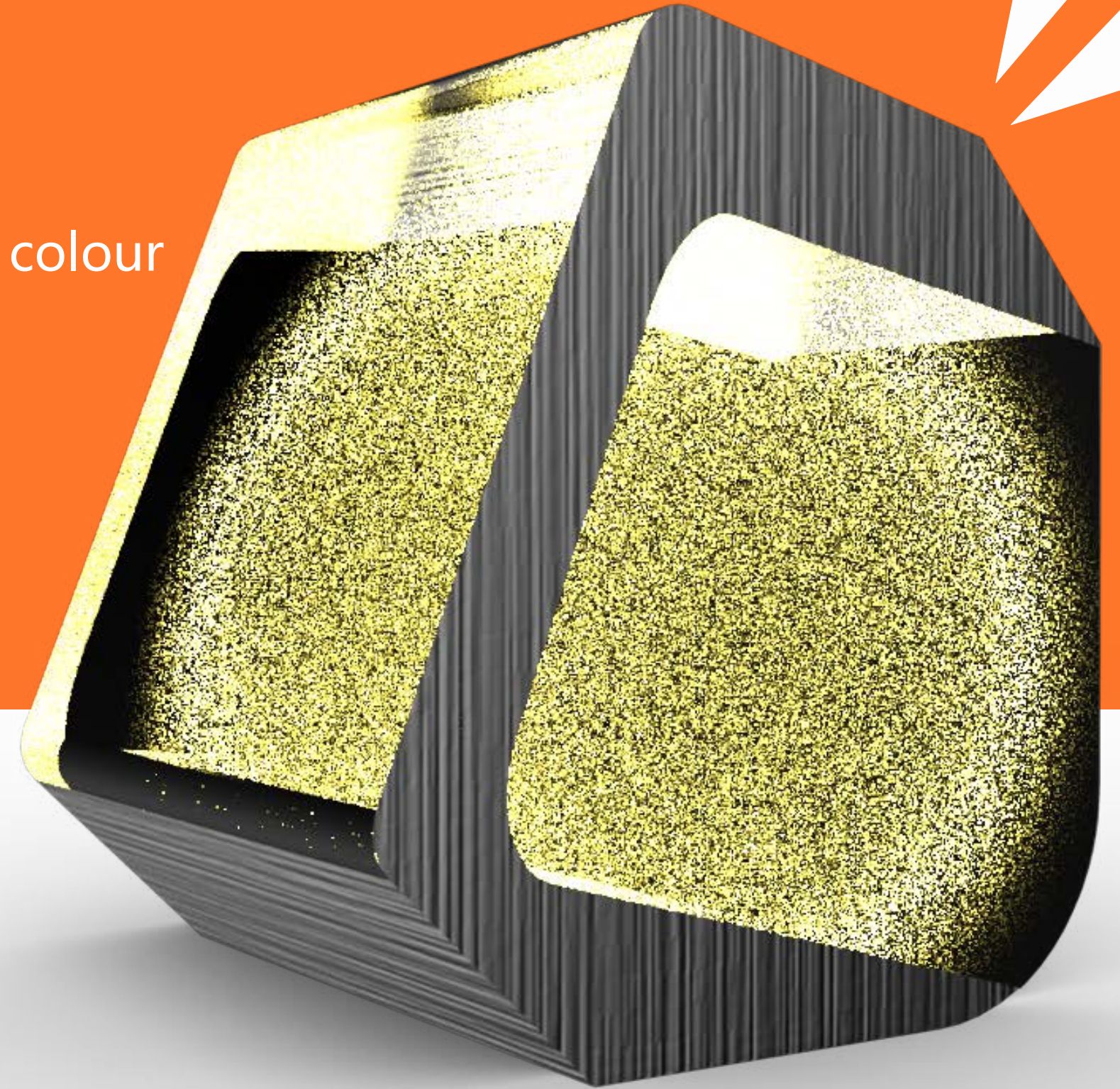
02. Make it a straight line

Shake the box to make the brush into mouth.



02.LAMP CLOCK

To represent time by the changing of intensity and colour of light.



INSPIRATION

01.Sunset Lanterns



This is the post of my favourite TV drama - the longest day in Chang'an.

This is the **sunset lanterns** in Chang'an, Tang dynasty. It creates an **atmosphere of sunshine at night**. The special light just like the sunshine in 10 am - soft and pure.

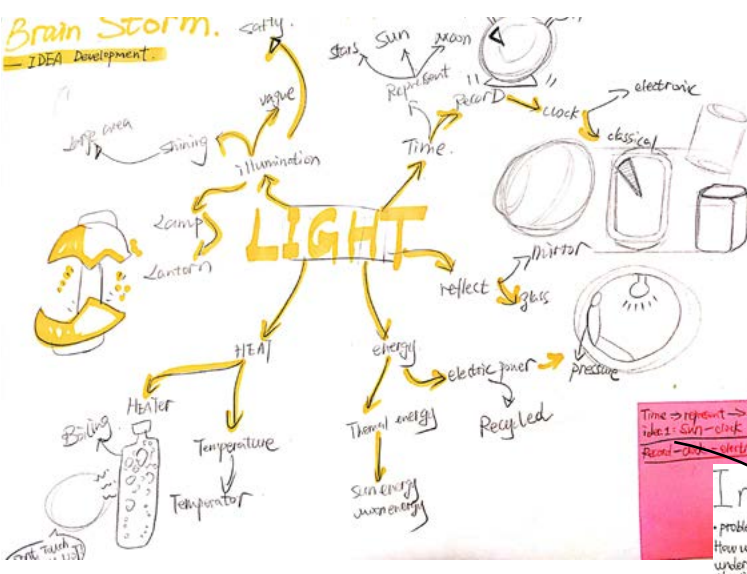
02.Iron- Flower Firework



This is the firework show in Ancient china.

People pour the **liquid Iron** and the amazing atmosphere can be made by **the collision beteen liquid and walls/objects**.

IDEA DEVELOPMENT

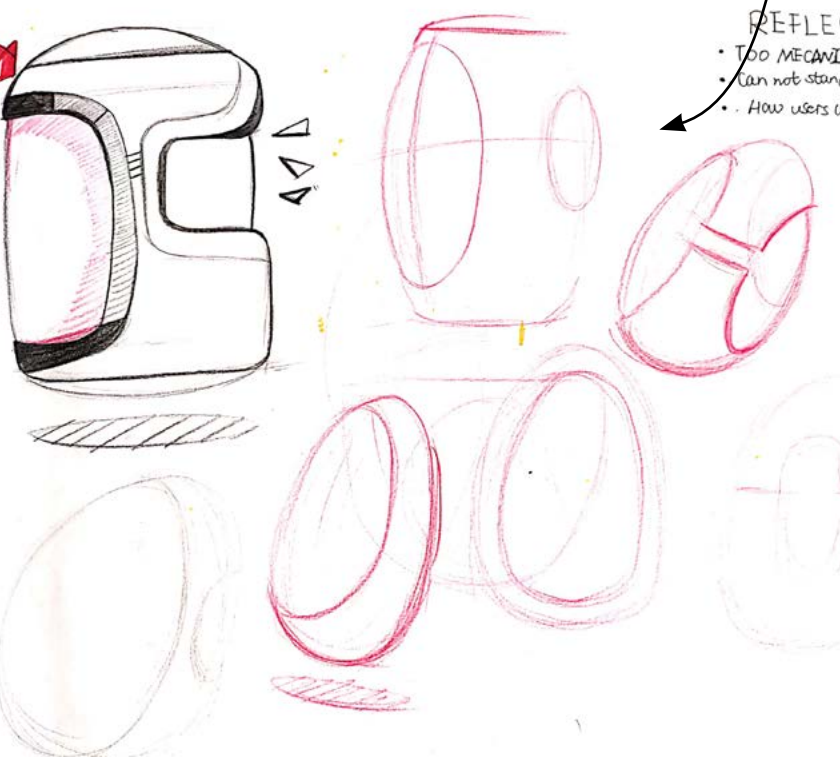
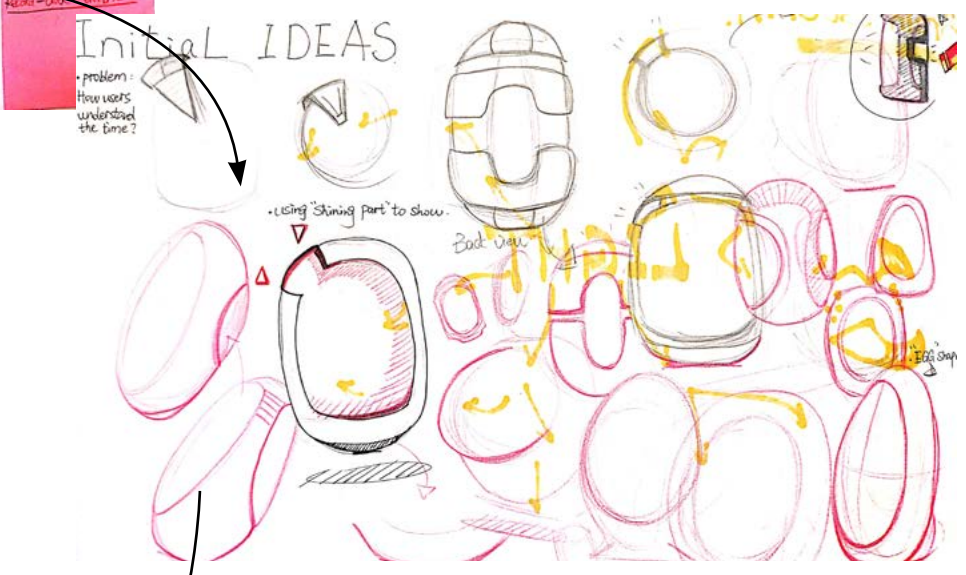


01. Brain storm

The functions of light: heating, shining, timing, energy, reflection.....
I picked timing to develop since it

02. Initial ideas

I wanted to shining of different parts to show different hours.
Big screen is good for users to see the color of light. Two screens ensure users can see the light at all directions



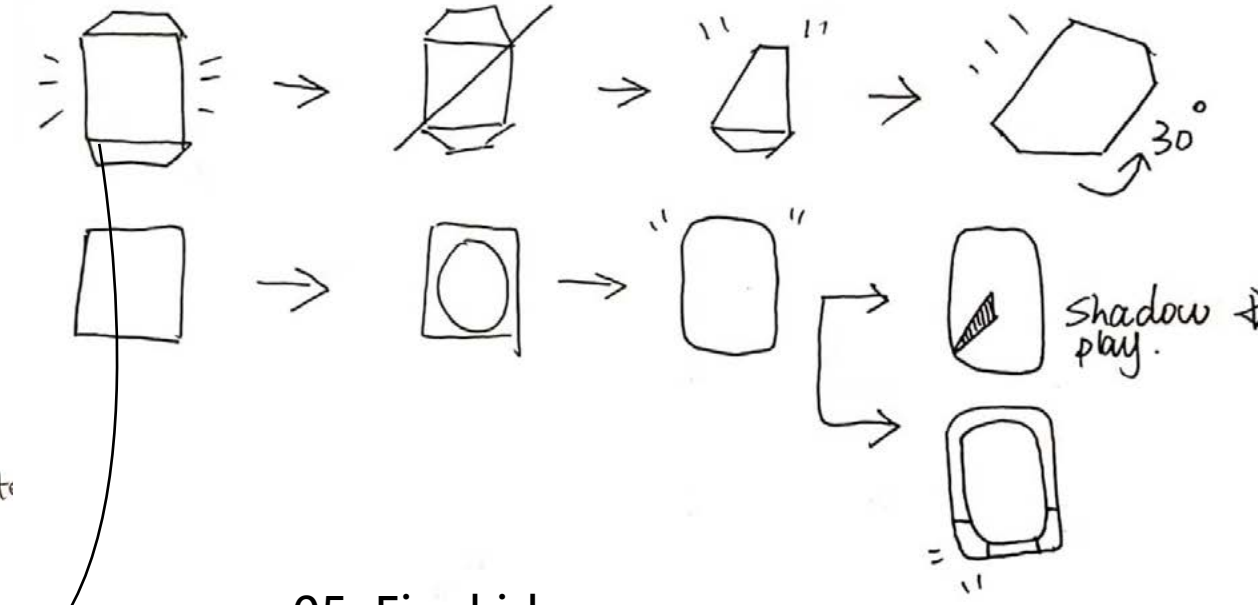
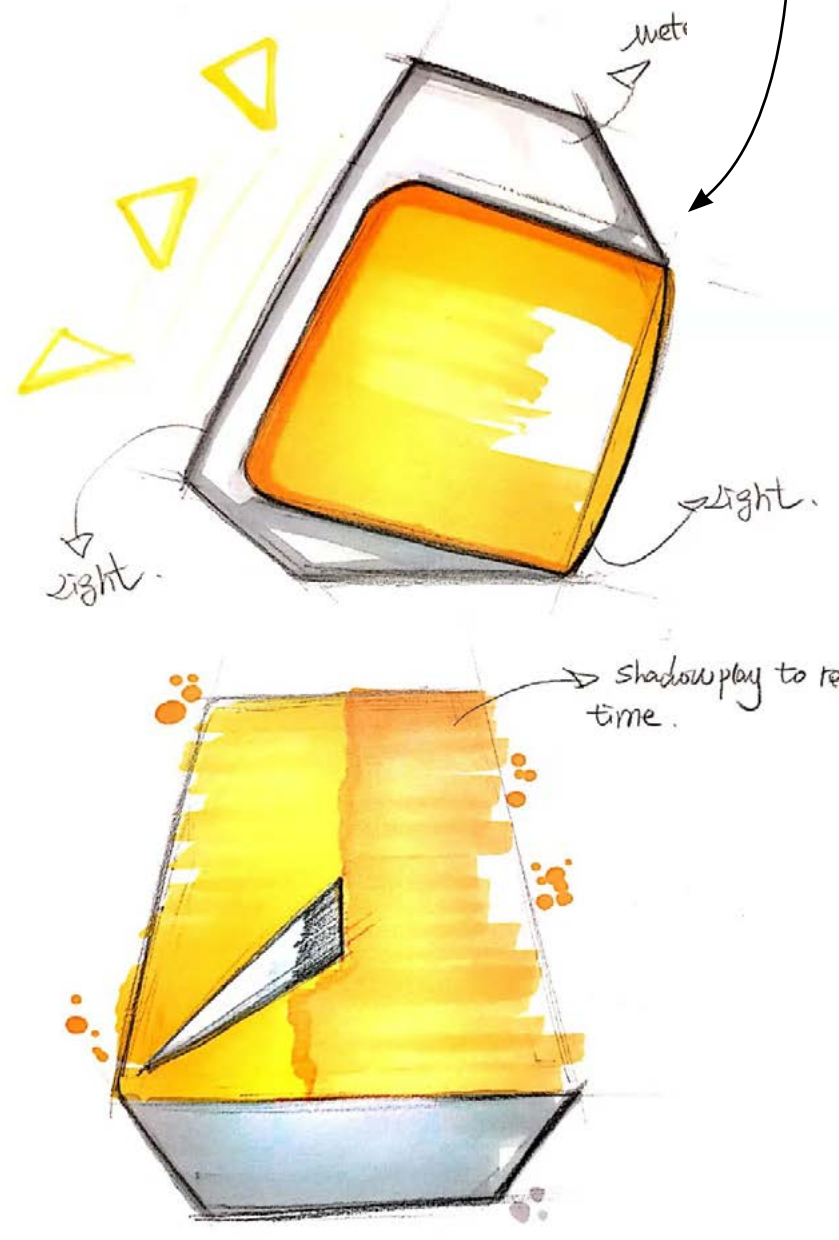
03. Reflection

too ugly, not fashionable
can not stand stable
users can not understand time directly

04. Improved idea

I think of the special shape of the lantern and the blurry light it emits.

So, I cut the lantern diagonally, then took out one of them and rotated it by 60°.



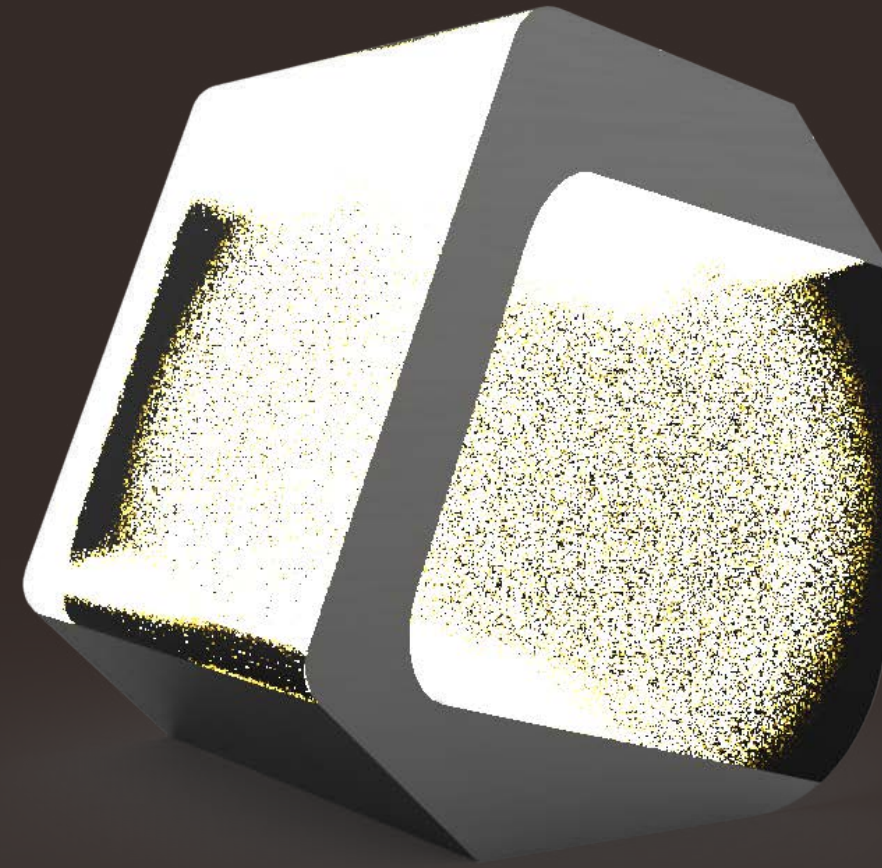
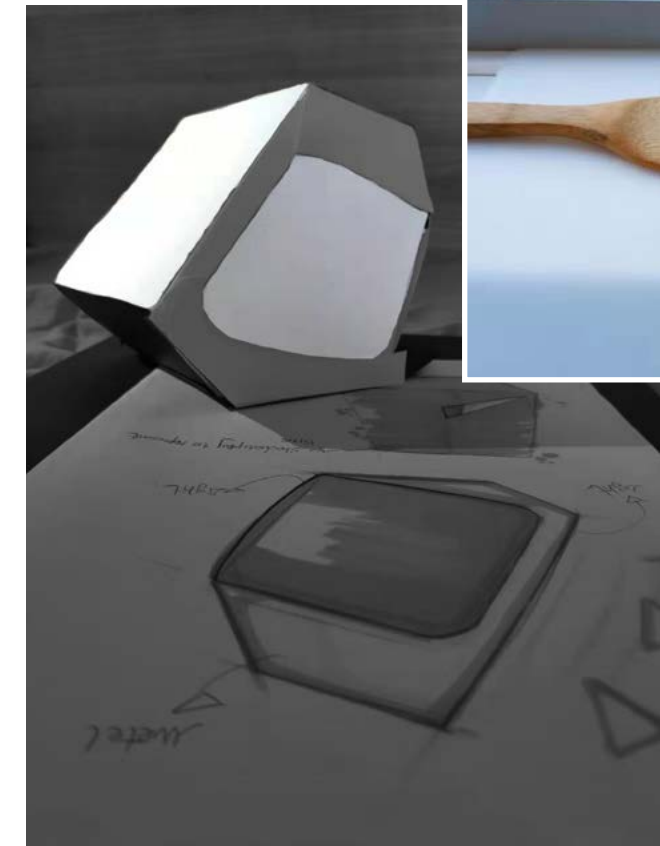
05. Final idea

I choose to use shadow play to indicate the specific time.

In general, this light represents time by changing the brightness and color of the light. At the same time, users can see a faint shadow which is used to represent the specific time.

This way, it can stand on the table and the area illuminated by the cross section is wider.

MODEL MAKING



Rendering

Model by Rhino
Rendering by Keyshot

Clapping **twice** to open or close it.

The **intensity and color** of the light will change each hour.

The position of **shadow play** let **users understand the exact time.**

FINAL OUTCOME



4 AM 5 AM 6 AM 7 AM 8 AM 9 AM 10 AM

LIGHT CHANGES IN THE
MORNING



12 PM 11 AM



13 PM 14 PM 15 PM 16 PM 17 PM 18 PM 19 PM 20 PM

LIGHT CHANGES
IN THE
AFTERNOON



24 PM 23 PM 22 PM 21 PM



1 AM 2 AM 3 AM 4 AM

LIGHT CHANGES AT
NIGHT

03. SADDLE CHAIR

- A MOVEMENT PROJECT

This is a **saddle chair**.

Users will not only **have a riding experience** when using this chair, but when they **stamp the stirrups**, the chair will become taller.

So, this chair is designed for those who can't see the blackboard in the back of the classroom.



PRIMARY RESEARCH

VISUAL DICTIONARY

I visited **hyde park and Harrods** and took pictures about movement. Then, I made a **visual dictionary** after organizing naming these movements.



SHARPEN



SHINING



PARABOLA



GROWTH



GROWTH



CIRCULAR



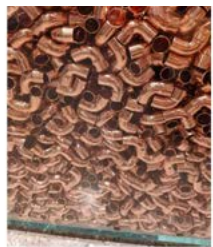
PUSH



ROTATE



EXPEND



BEND



LINEAR



SHINING



RUNNING



DRAWING



FLOW



UNEVEN



TWIST



DROP



FLOW

SECONDARY RESEARCH



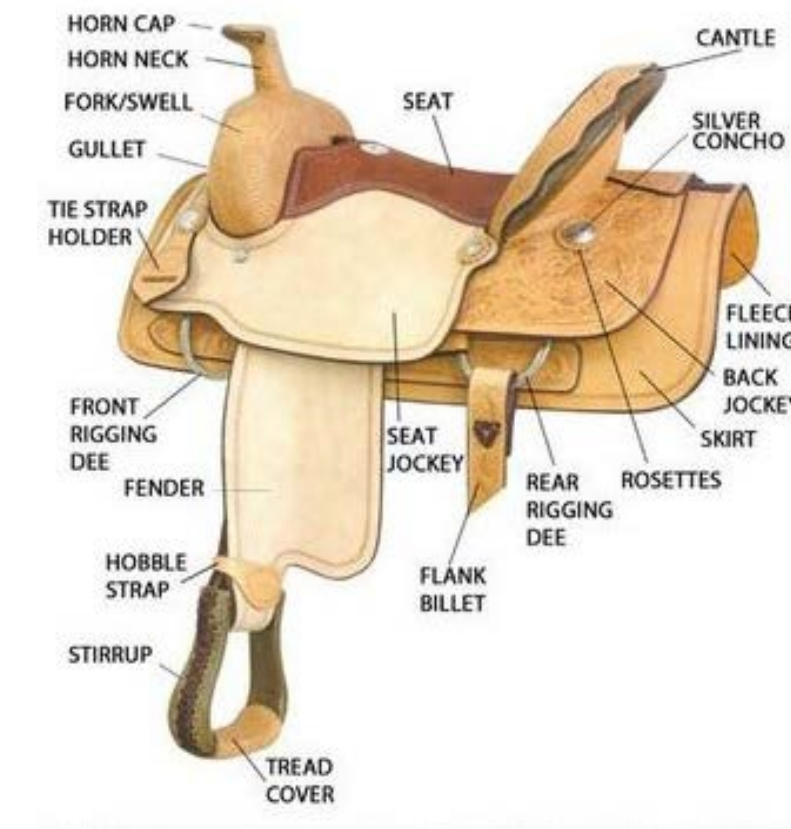
01. IMPERIAL SADDLE

Period : QIN Dynasty
Location: the Palace Museum, Beijing

Personal comments:
 The birth of saddle solves the problem of the ancient cavalry being thrown off by a fast running horse which is a moving object.

Although it is not the first saddle in the world, the birth of saddle increase the force of cavalry and influence the acient society a lot.

I want to **show my respect** to this antique through this project.



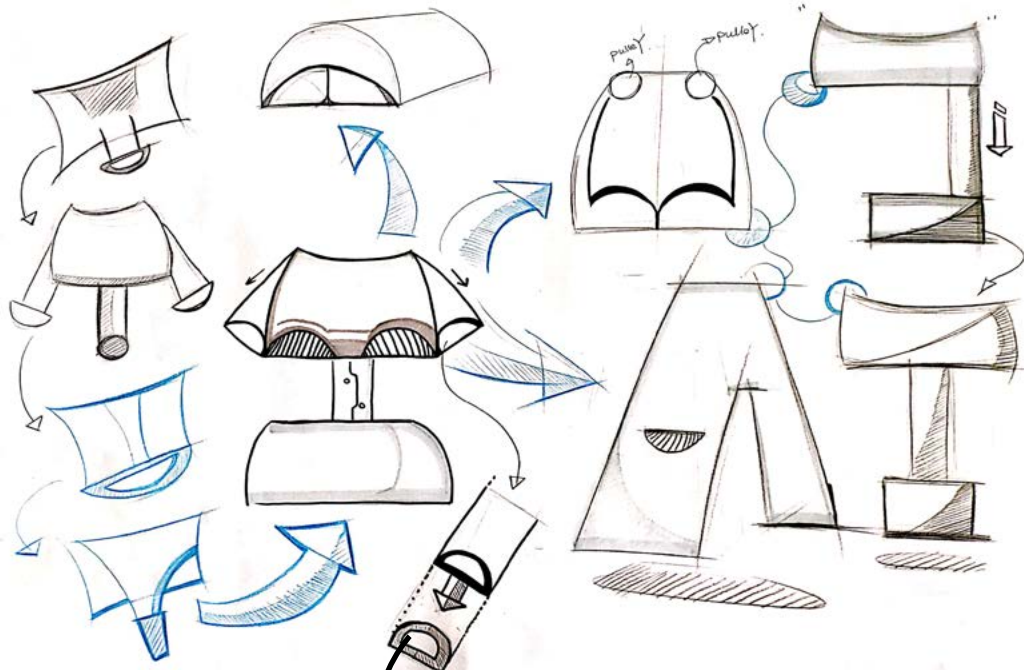
02. Structure of saddle today

Personally, due to minimalism, I realized **seat, horn, cantle, stirrup** are **necessary** parts of a saddle.

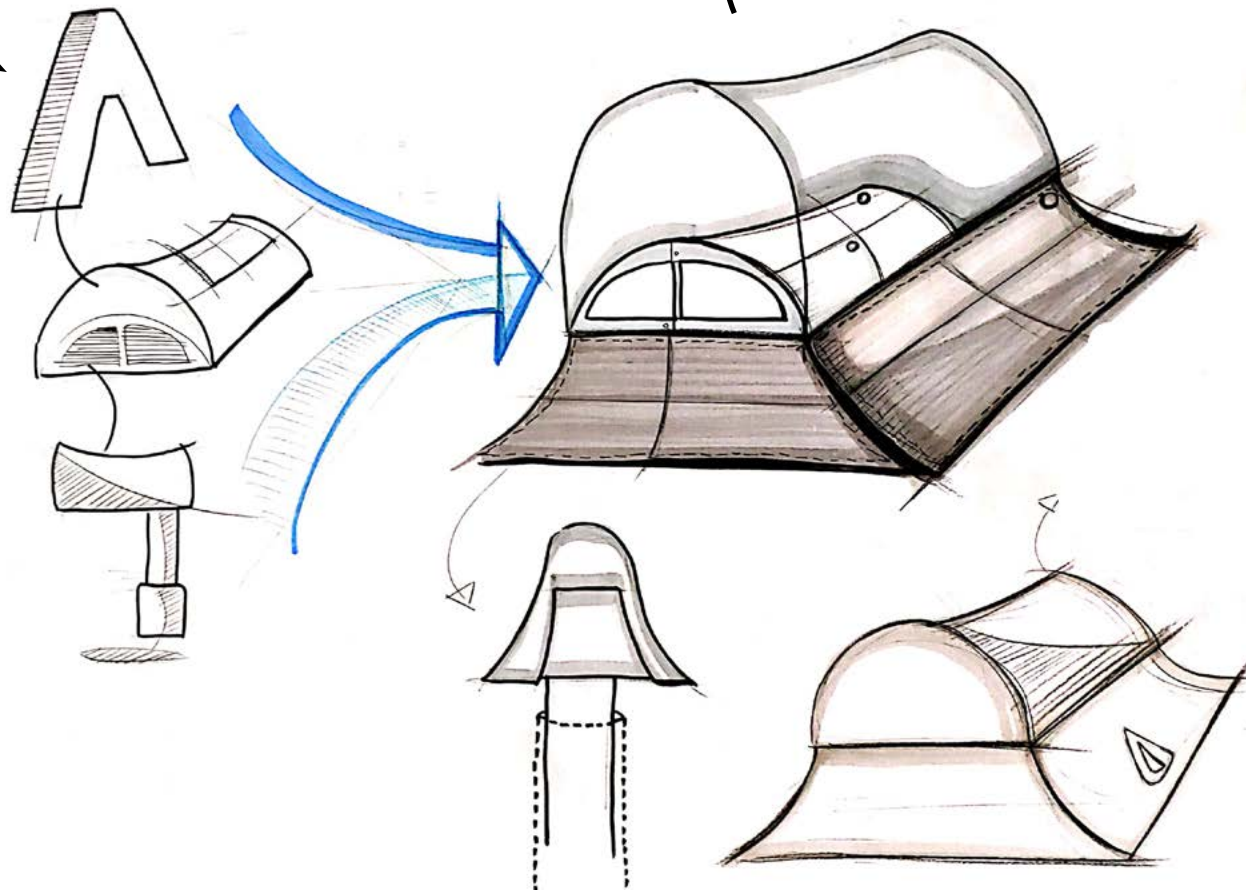
Research source:
barlcorral.ecrater.com

IDEA DEVELOPMENT

INITIAL IDEA



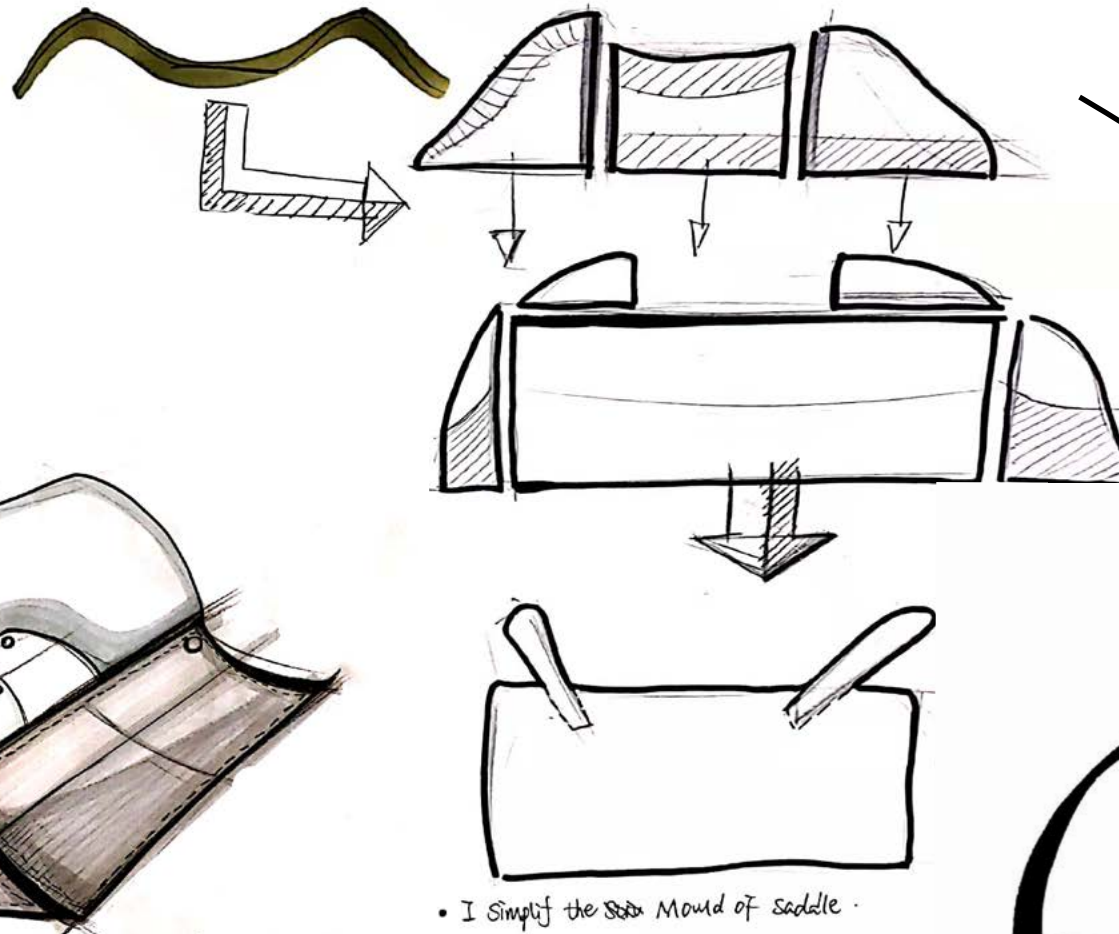
IMPROVED IDEAS



REFLECTION

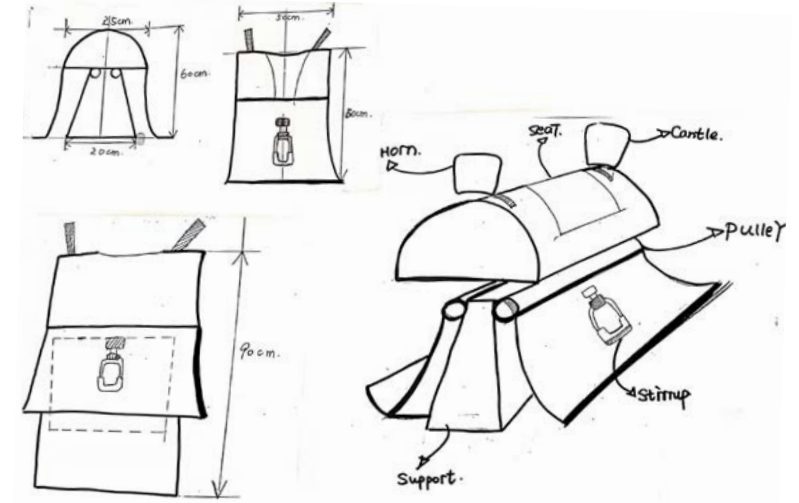
I combine three features (long legs, saddle and up-down structure) and then create the final idea.

SKETCH MODEL.

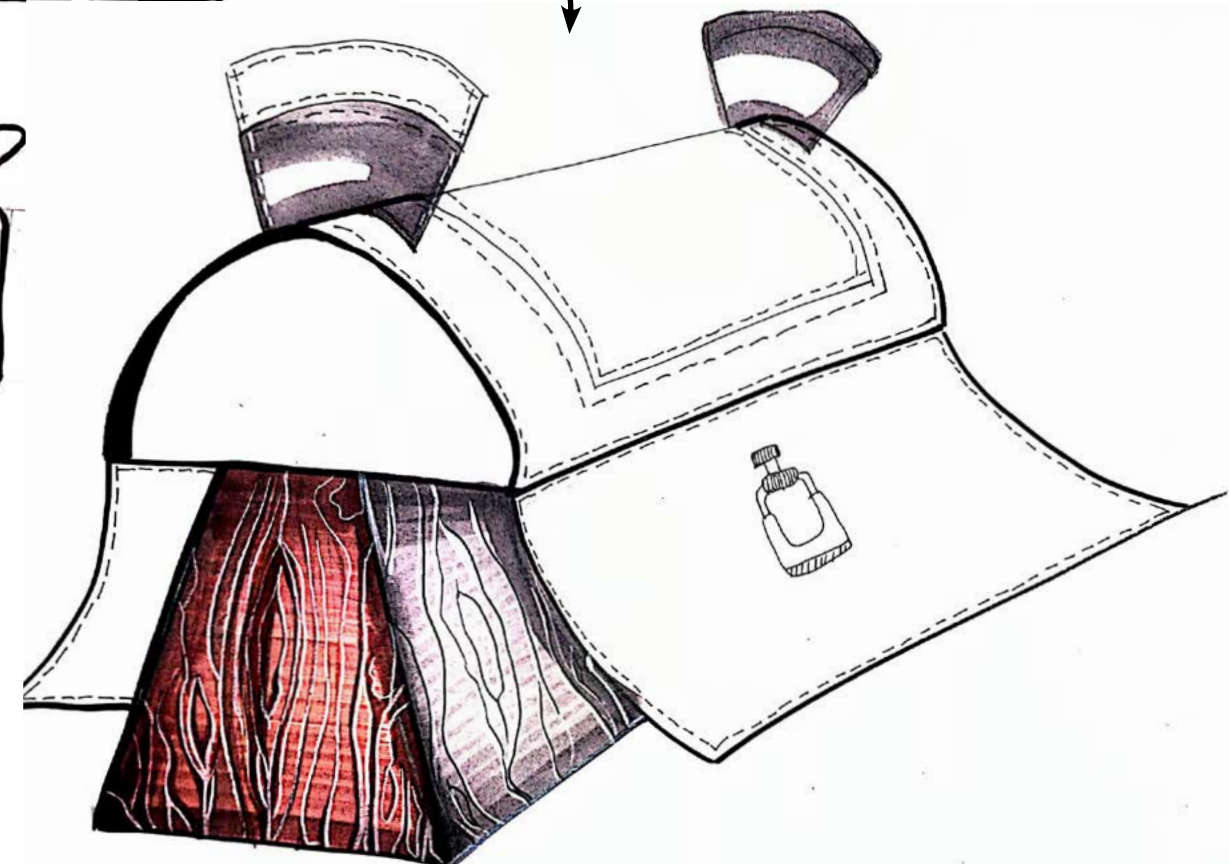


SKETCH MODEL

I simplified the structure and use two shell shape leather board to replace the original saddle shape.



FINAL DRAWING



FINAL OUTCOMES



Users can put this chair at the back of classroom so that they can see the black board clearly by **Adjusting the height** of saddle chair.

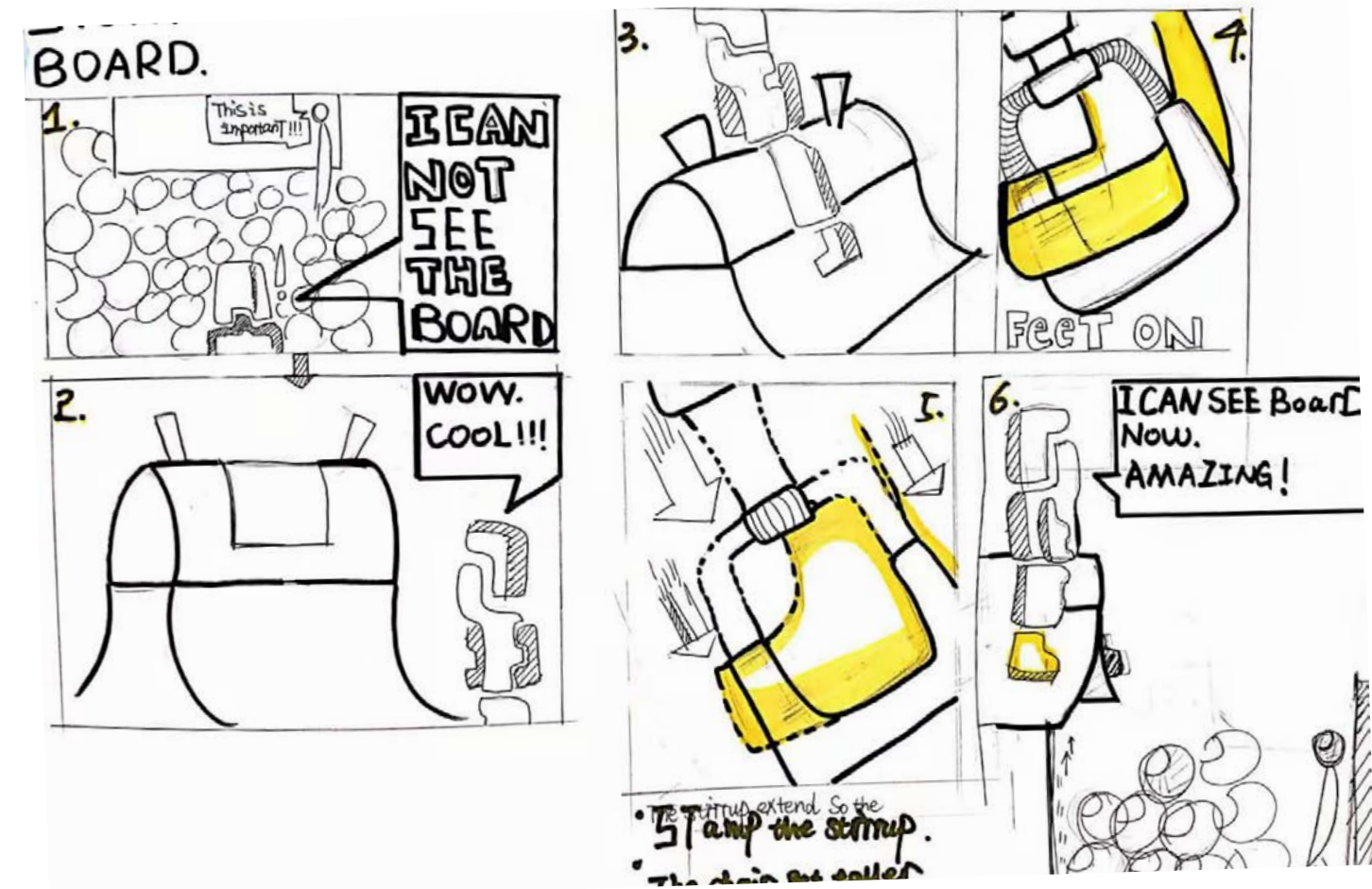
Made of artificial leather, which is sustainable and features of waterproof, durability are better than real one.

More resitant to moisture, intensive exposure to sunlight.

Make more sence than genuine leather.

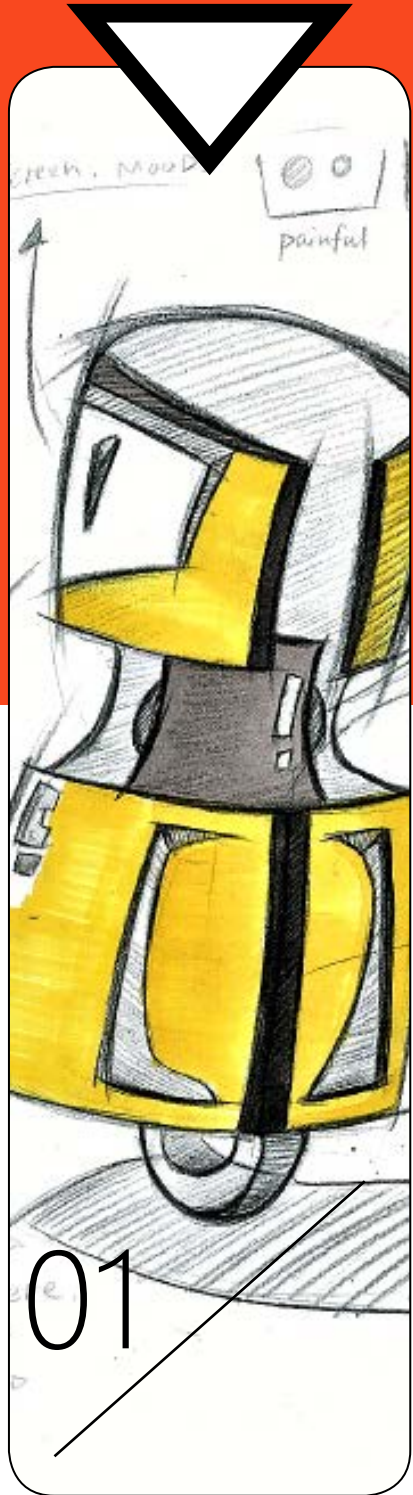
STORY BOARD

Mr. Nobody is a short man and he always cannot see the blackboard.....



TO SEE MORE PERSONALWORKS, PLEASE CLICK PICTURES BELOW.

CLICK



01

2018 PORTFOLIO

CLICK



02

SPACESHIP

CLICK



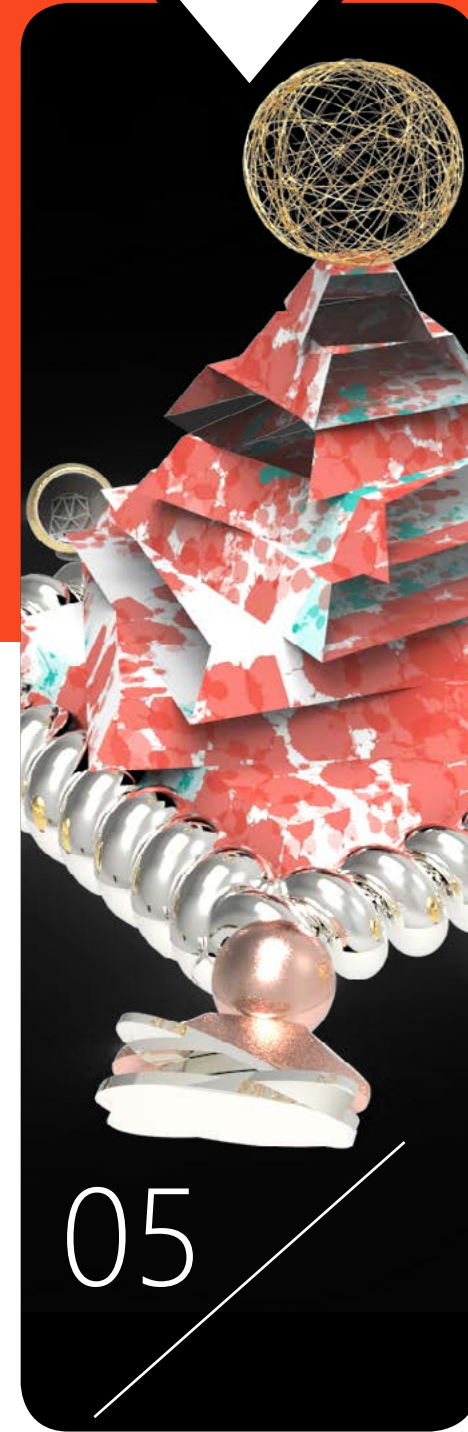
03

MODELS



04

PERSONAL WORK



05

INSTALLATION