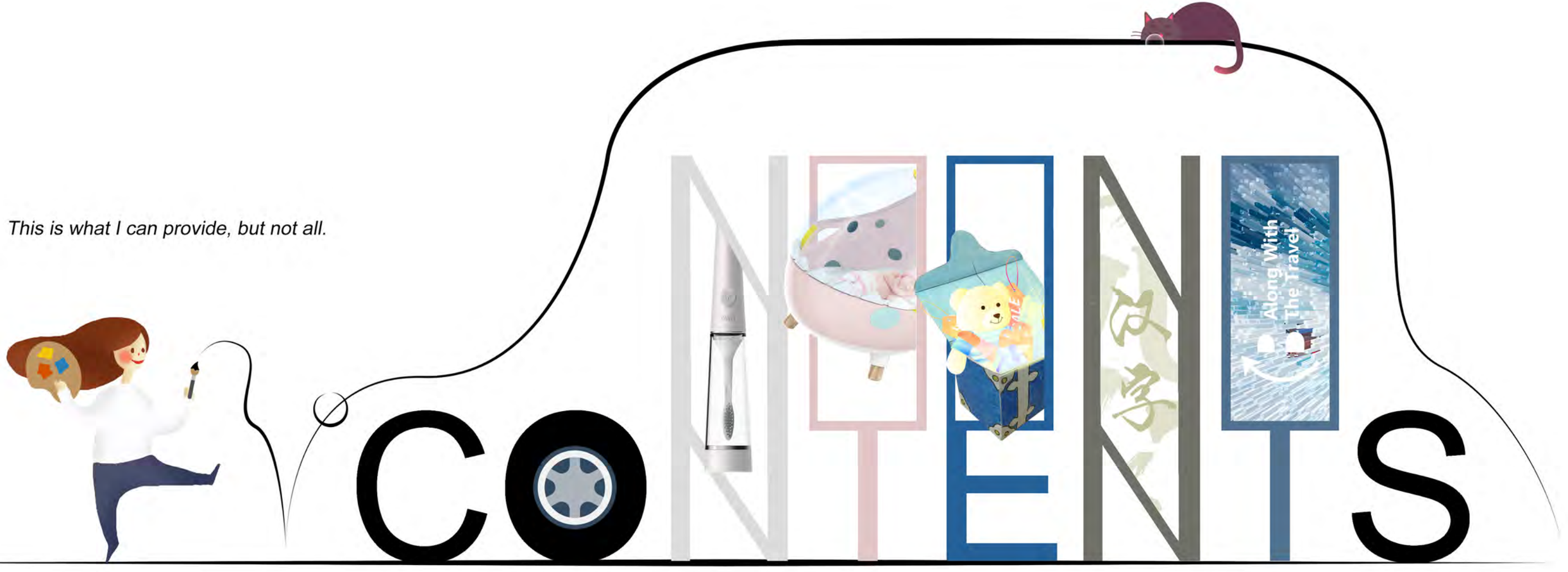
This is what I can provide, but not all.



Dr.Health

PROJECT OVERVIEW: Dr. Health is an amazing product that combines functions of the household appliances including electric toothbrush, charging base, sterilizer and dryer. It excels in removing the invisible harm led by toothbrushes and its effective performance in preventing secondary pollution would provide users with better healthcare on oral cavity.

DURATION: 08/2018-09/2018, 6-week

PROJECT FEATURE: Sole project(in addition to cultivating bacterial experiments)

Oral Bacteria Elimination

Portable intelligent toothbrush drying disinfector

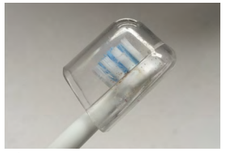
BACKGROUND ANALYSIS

Discovery of issues

Problem one: toothbrush exposed in the air is easy to cause secondary pollution. However, the brush head with the dust cover is wetter and more likely to remain dirty. Most users' brush heads are unhygienic.

Wet bristles

Dirty handle


Dirty cap

The out-diffusion of bristles

Problem two: the bathroom has damp environment and poor ventilation.

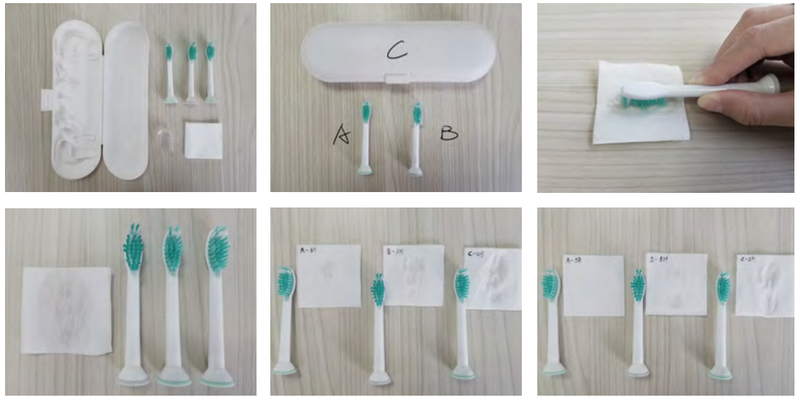
Humidity of living room:45%

Humidity of bathroom:72%

Cause Disease

It usually takes 30 days for contaminant generation on the bristles of ordinary toothbrushes under household environment, amounting to millions of bacteria, which is equivalent to the number of bacteria in a toilet seat. People usually do not pay much attention to hygiene issue of toothbrushes after use, a humid environment will often make the rapid reproduction of bacteria, which could easily cause oral bacterial infection.

Problem three: keeping toothbrushes in a portable for a long time will produce peculiar smell When you go out and take it with you.

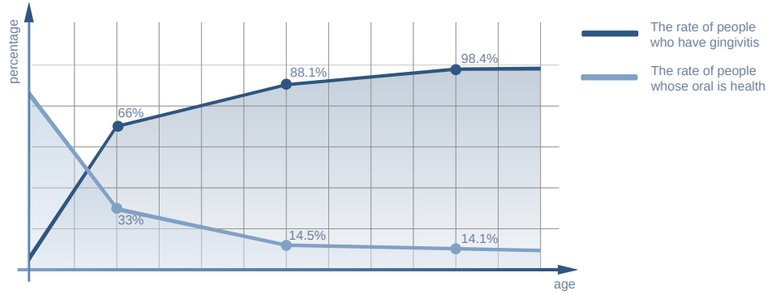


I define three toothbrush heads as “A, B and C”. After brushing with them respectively, A is exposed to the air, B is covered with a dust cover, and C is placed in a portable box ,I then test the moisture level of the bristles of each toothbrush head by pressing the bristles against the testing paper, followed by recording the moisture content of each within three intervals of time.

Conclusion

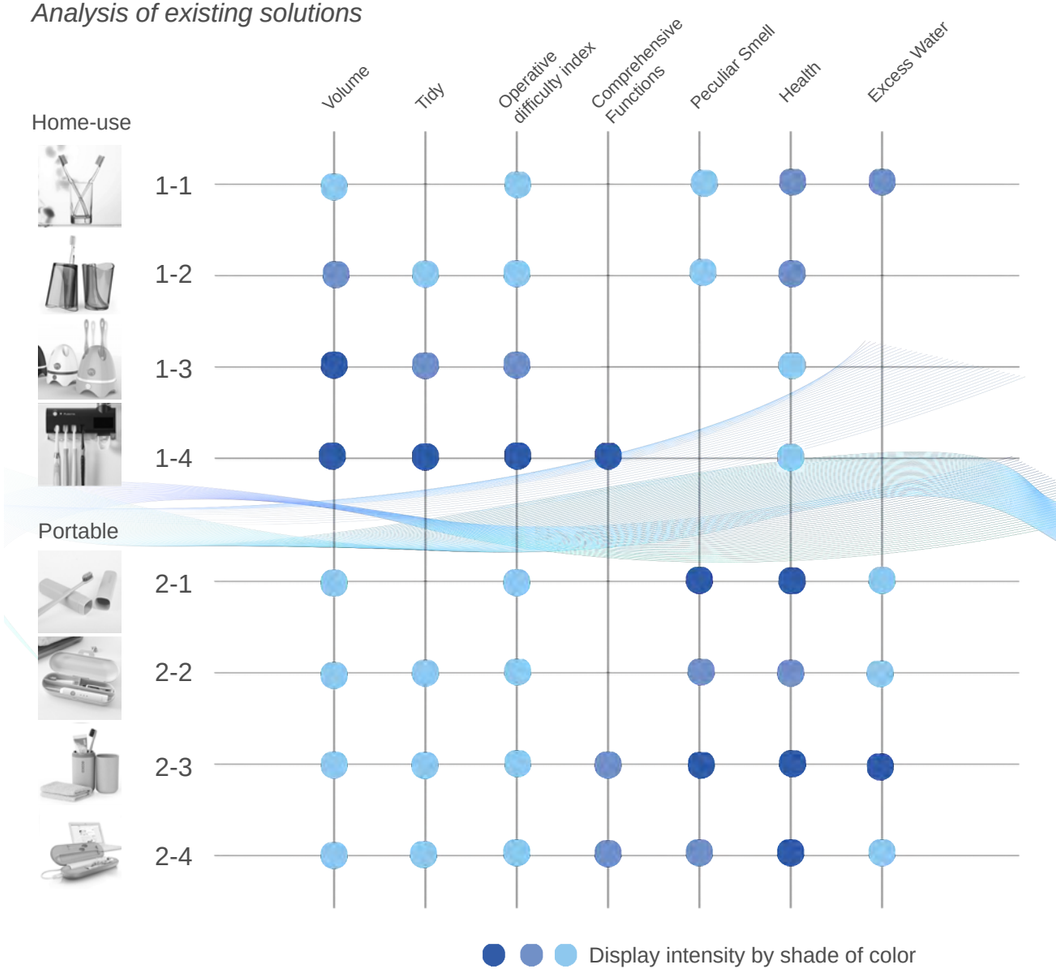
Brush head is the least likely to dry when placed in a portable case, and will produce peculiar smell, followed by using a dust cover.

Even Worse



According to studies for the 3rd National Oral Health conducted, most oral diseases of different age groups are not been effectively treated. Bad teeth will affect your overall health.

Analysis of existing solutions



Conclusion

There is an irreconcilable relationship between the cleanliness and the degree of operational difficulty as well as the volume for the existing subordinate products of household toothbrushes. In the meanwhile, portable box products (for the use of containing toothbrushes) are prone to water, and would easily produce peculiar smell.

WORKING PRINCIPLE

Conjecture of working principle

Infrared Ray

High temperature disinfection — International standard: 120 ° C

(Food grade PP plastic and thick tempered glass should be used)

Drying and heating function can avoid secondary pollution

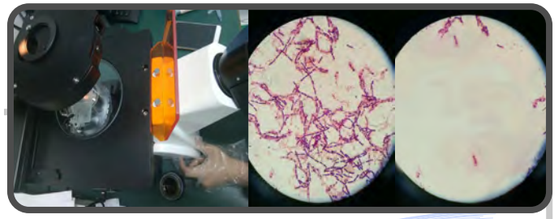
Ultraviolet Rays

Made of special quartz glass, a new high-concentration gaseous ozone ultraviolet lamp.

It could sterilize more effectively, which achieves the purpose of disinfection and cleaning.

With reference to the internal mechanism of existing products which fulfill the functions of disinfection and drying (e.g. clothings disinfection machine, cupboard disinfection machine) that sold in the market, we may speculate the feasibility of disinfection by using infrared ray or ultraviolet ray.

Conclusion:
The experiment proves that the toothbrush can effectively kill the bacteria on the bristles after being disinfected by the cupboard sterilizer. Therefore, the principle of ultraviolet disinfection, infrared drying and heating to avoid secondary pollution is achievable.



E. coli microscope comparison chart
(Left: under normal condition; right: after drying and disinfection)

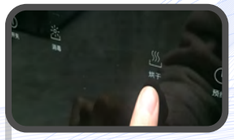
Experimental argumentation

21/09/2018 Preliminary preparation of the experiment

In this experiment, my fellow student majoring in biological environment and science are invited. By comparing the amount of bacteria in the bristles of the toothbrush for the sample A, B and C (one electric toothbrush head and two ordinary toothbrushes) before putting them into the cupboard disinfection machine with the amount after disinfection, the principles of hypothesis i made could be tested.

8：00am

After brushing the teeth, we extract the brush sample and put it aside, and then we put the toothbrush into the disinfection cabinet.



disinfection and drying.

waiting 2h

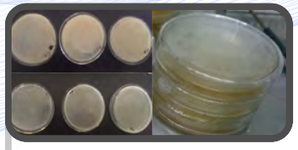
8：15am
Remove the toothbrush from the cupboard sterilizer and sample the bristles
10：15am

9：15am

Sterilization is required before the use of solid media (121 ° C, 20 min sterilization in autoclave)

The preparation for the culture of bacteria is completed during the disinfection process (the agar is hard to dissolve at normal temperature, so it needs to be heated, and it will solidify when the temperature is low.)
Formulation:
Bacterial Medium: 1L
Take beef extract: 5g
Peptone: 10g
Sodium chloride :5g
pH: 7.0~7.2
Agar: Add 15g~20g

Autoclave for 20min



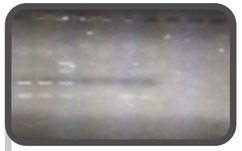
After the solid medium is sterilized, it is poured into a Petri dish in an aseptic processing table, cooled and solidified, and then placed upside down, and the bacterial liquid is diluted in a gradient.

Dilute the bacterial solution to the 10^{7}
Dilute the bacterial solution extracted after drying and disinfection to 10^{-7}

After 3 days

Extraction of DNA from the target strain:

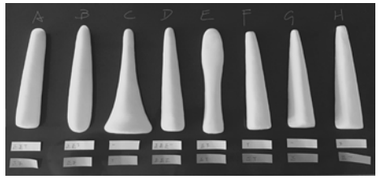
1 mL of the bacterial solution was taken from the medium cultured for 3 days for PCR amplification.



Electric tour result map (white bar part contains oral common bacteria Escherichia coli)

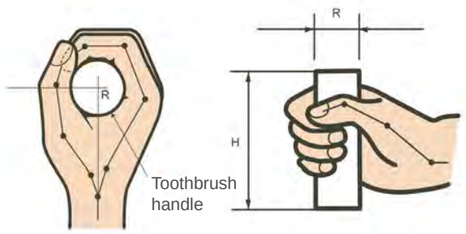
APPEARANCE MODELING EXPERIMENT

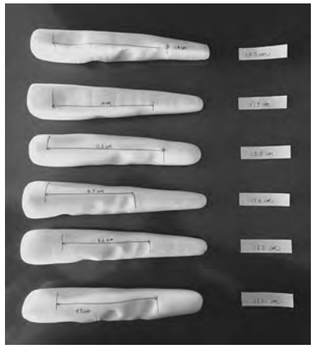
Experimental overview



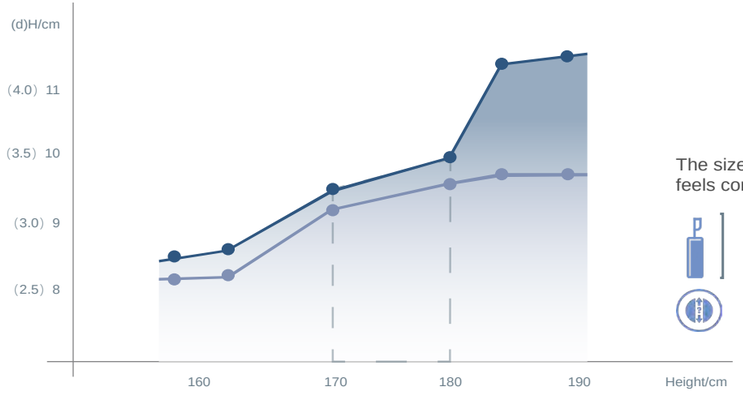
After analyzing the basic shapes of tooth-brushes sold in the market, I generalize them into eight basic shapes. My research is based on the sample consists of 60 people who are chosen randomly and text conditions that affect the aesthetics extent and operating comfortableness for tooth-brushes. The experimental data were obtained based on the parameters or variables including the manner how a person hold a toothbrush (touching point); heights of individuals; the correlation between the diameter and the length of the bar in their fingers when they hold tooth-brushes.

Experiment procedure

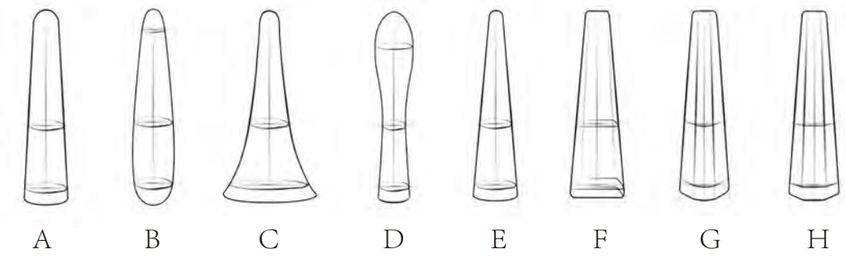




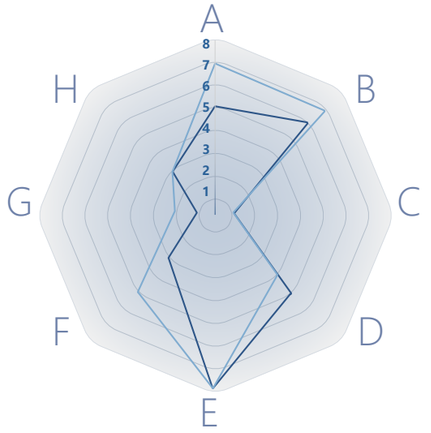
The relationship between the diameter & length of the handle and the height of the user.



The size that the public feels comfortable



The experiment is based on 2 choice questions, respondents in the sample are supposed to select their favorite holding manner as well as the appearance modelling (only one choice for each question). The comparing and contrasting results are displayed below.



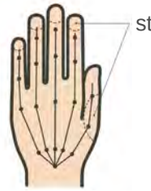
Aesthetics extent and comfort extent of each handle shape

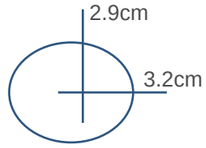
Comfprt extent

Aesthetics extent

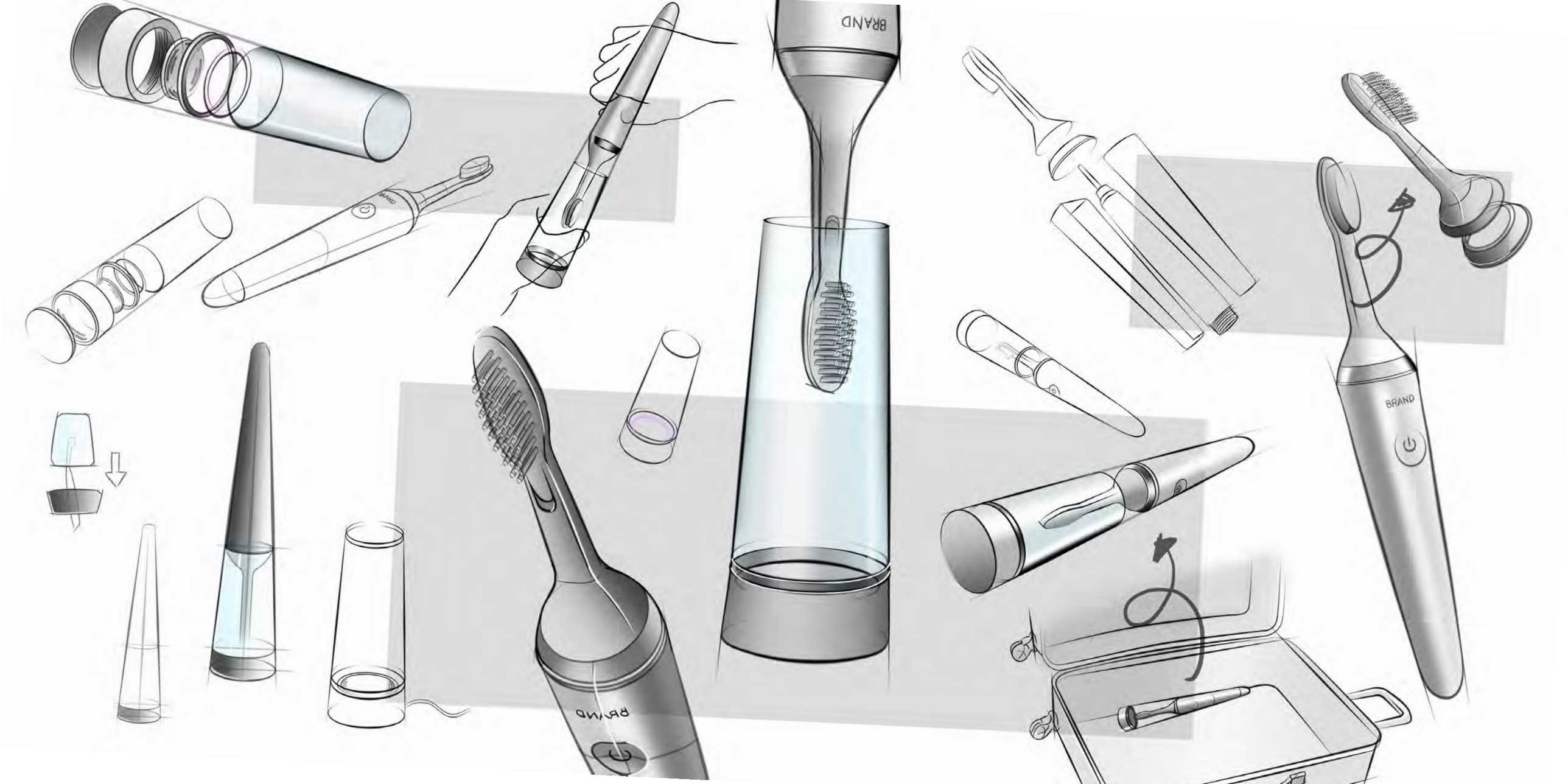
Conclusion

The highest vote for the user is the E handle.





According to the position the tester pressed, I found that the comfortable shape is not a positive cylinder.


BRAND
BRAND
BRAND
BRAND

Dr.Health

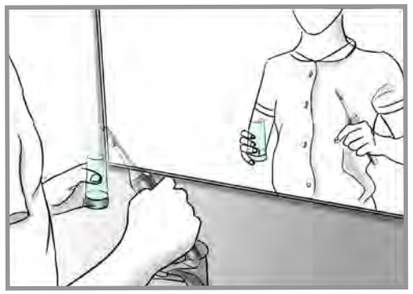
Portable intelligent toothbrush
drying disinfector

Resin	Quartz Crystal	Aluminium Alloy	Cupronickel
High Borosilicate Glass	Phenolic Resin	Phenolic Resin	Crude Steel

1. Rotating Lid on Top
2. Rechargeable Battery
3. The Cabinet of Toothbrush
4. Packaging Layer of Internal Component
5. LED Light
6. Battery Compartments
7. Electron Component
8. Transmission Gear Set and Reinforcing Rib
9. Power Button
10. Transmission Shaft
11. Toothbrush's Head
12. Glassware
13. Air Handling Panel
14. Infrared Lamp and Ultraviolet Lamp
15. Charging Induction Coil
16. Inductive Charging Element
17. DC Interface
18. Scavenger Fan
19. The Cabinet of Charging Cradle
20. Rotating Lid of Charging Cradle

PRODUCT DESCRIPTION

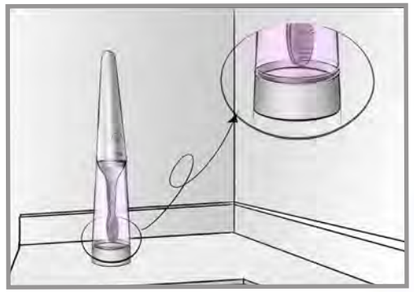
Storyboard



1.Remove the toothbrush from the base of the bottom.

2.Tooth brushing

3.After using it, user insert the toothbrush into the base of the botton.



4.Automatically turn on disinfection and drying mode

Usage Scenario

Home-use

Portable

PROJECT OVERVIEW: This product simulates the environment of the mother's womb, providing the most comfortable sleep and entertainment environment for the baby. At the same time, the safety of the baby is ensured through monitoring and reminding functions, so that parents no longer need to take care of the baby all day.

DURATION: 10/2018-11/2018, 5-Week

PROJECT FEATURE: Sole project

Baby In Wonderland

Baby's Own Little World

Baby cradle

BACKGROUND ANALYSIS

Take care of baby

After feeding the baby,cousin will pick up the baby and gently stroked her back, and then put into the cradle and carefully shake, otherwise the baby will vomits milk easily.

Mom is a superwoman

My cousin had to lull the baby by talking, playing games and singing, so as to successfully change diapers, feed her and lull her to sleep. Because baby is too dependent on her mother.

Baby is overly dependent on its mother

I went to my cousin's house to see the half-year-old baby. But when my cousin put the baby in the cradle and talked with us, the baby began to cry.

Mother is not feeling well

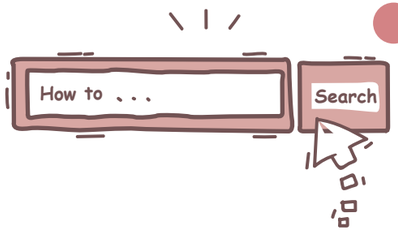
Cousin said, “holding the baby for a long time causes pain in the wrist, waist and neck, which can even lead to joint damage. Sometimes joint is pretty painful that I had to go to the hospital or massage center.”

Parents are tired of looking after their children all day

Cousin said,“she needed to take turns with my brother-in-law to take care of the baby all night, otherwise she will felt uneasy.As a result, both of them are not in a good state to work or do house-work during the day.”

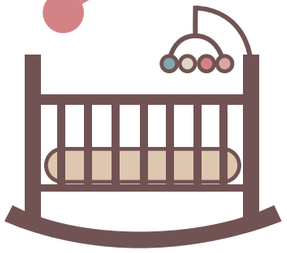
So many parenting methods, which is the best?

Parents of newborn don't know how to properly take care of their babies. They learn by reading parenting books, online searching, asking doctors and asking experienced elders.



Why is the baby cannot do without its mother?

The father went over and picked up the baby, but how to lull her are useless.Finally, cousin had to lull the baby in person, miraculously baby immediately stopped crying.



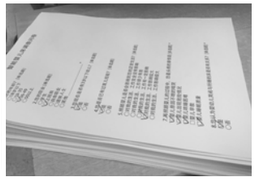
Parents are not entirely reassured

Even after putting the sleeping baby into the cradle, my cousin's family still feel worried about the safety of the baby.Therefore, they can't fully devote themselves to their own work, and they still need to leave a person to look after baby from time to time.

RELEVANT RESEARCHES

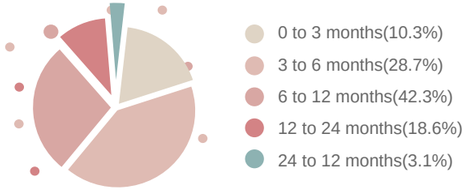
User research

Research location: Ningbo Science and Technology Museum



Retrieve key information

A total of 100 questionnaires were issued and 97 questionnaires were recovered.



Conclusion:Baby aged 3 to 6 months cry mostly, followed by 0 to 3 months, 6 to 12 months.

- Listen to music and tell stories for baby.
- Rub her face against the soft towel blanket.
- Put my pyjamas on the pink panther,Then put the pink panther's hand on the baby's belly and she can fall asleep.
- The baby likes to smell her mother's clothes to sleep or grandma gently pat her on the back
- Put baby on my shoulder and gently touch her back.
- Gently shake the baby in my arms and call her nickname.
- baby especially like to press the iphone's home button which makes her quiet when she see the screen turns on and off.
- Make a slight "xu" sound in the baby's ear.
- Buy her a new barbie doll and she will be quiet when she changes Barbie clothes.
- Buy her a new barbie doll and she will be quiet when she changes Barbie clothes.
- It has a good calming effect when baby Listen to the white noise of fans and vacuum cleaners.
- Wrap her closely in a small quilt, she'll feel safe.

Main questions in the questionnaire

Q1-3:Personal basic information

Q4:what about the ages of your child cry mostly?
A.0 to 3 months.
B.3 to 6 months.
C.6 to 12 months.
D.12 to 24 months.
E.24 to 12 months.

Q4:Does babysitting affect your normal life?
A.It didn't affect my life or work at all.
B.It rarely affects my life or work.
C.Sometimes it affects my life or work.
D.Have a great effect on my life or work.
E.Have very serious effect on my life or work.

Q5:Do you think infant crying is related to the cradle in which they sleep?
A.Yes.
B.No.

Q6:What is the biggest headache while taking care of your baby?
A.The baby's cry was unexplained.
B.Have an emergency.
C.It is difficult to lull a baby to sleep.
D.Early education.
E.Sleep quality.

Q7:What do you think a cradle is?
A.A place where baby sleep.
B.The baby's own space.
C.Others_____.

Q8:Is there any way to soothe a baby?
_____.

Touch
Odour

Voice
Feedback
Light

Pat
Shake
Swing

Typical case

Main content of interview

what is the medical definition of this kind of behavior that a baby cannot live without its mother?

It's called separation anxiety disorder.The baby from the quiet and comfortable womb environment to the new world will feel strange and lonely, so they are very dependent on their mother. The baby will think that the mother left is gone, so will cry, but this is a sign of growth.

what about the ages of this phenomenon that will more apparent?

12 months ago. At this age,the baby is in the most severe stage of separation anxiety. The attachment relationship of the baby is very simple, he will look for the person who is closest to him, and he will reject strangers very much.

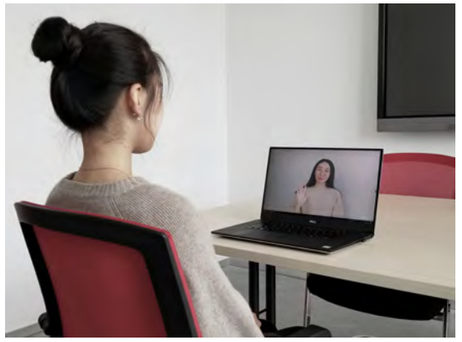
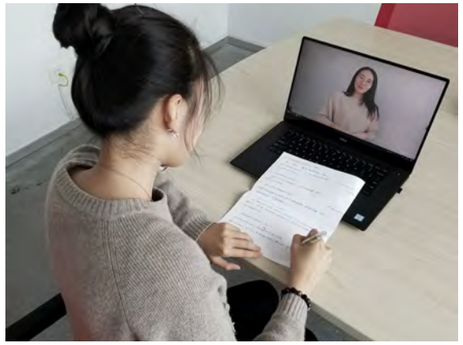
what about the ages of this phenomenon that will reduce?

After 2 to 3 years old. This age group of babies have a correct judgment of the phenomenon of relatives walking away, and it is easy to communicate. In addition, the baby's adaptive capacity is significantly increased, usually do not cry non-stop.

Is there any scientific way to soothe a 4-24-month-old child?

Modelling the sound of uterine environment, contacting with the baby ,dredging excess gas after dinner, enhancing the baby's sense of security, talking to her more to ease emotions, playing music or giving her safe small toys to divert attention, these methods will be better to appease the effect.
Finally: it is better to let the baby sleep in the cradle instead of holding it, because holding it for a long time will press on the baby's body.

Remote video interview with parenting experts, Shuming Gu (Clinical psychologist and children's picture book writer)

Conclusion

According to interviews with a great number of parents and parenting experts, it can be concluded that the reason why babies cry is that they are not adapted to the new world from the original environment, so they rely on close people. Parents often hold their children for too long because they don't want them to cry, but in fact, children of this age group are more suitable to sleep in the cradle because of their physical development needs.

FURTHER INVESTIGATION

Product & Marketing Research

The following conclusions are drawn by analyzing the six representative styles of cradles that sell best in the Chinese market.

		Adjustable backrest	Collapsible	Electric rocking	Manual swing	Safety protection	Removable and washable seat cushion	With a toy	A mosquito net	White noise	Music	Remote control	Can be combined with bed	Bottom pulley	Size is adjustable	Lifting handle
Fisher-Price		✓	★	✓		✓	✓	✓								
KUB				✓		✓	✓	✓	★							
4momsv		✓		✓		✓	✓	✓		★	✓	★				
Sarakuhi		★			✓	✓	✓	✓								
NNM					✓	✓	✓	✓					★	✓		
Muchuan			✓		✓	✓	✓	✓			✓				★	★

Essential points

All cradles have the basic functions of guaranteeing infant safety, removing and washing the seat cushion and hanging toy.

Comparative points

Electric cradle and manual cradle each account for half of the market. Electric cradles are usually bulky,moreover manual cradle is more suitable for experienced parents, novice parents easy to shake too hard that will lead to the child dizziness and vomiting milk.

Analysis

1. Playing music is suitable for entertaining babies, while white noise is more suitable for sleeping babies.
2.Using mosquito nets not only can prevent mosquito bites, but also can block part of dust and strong light.
3.Adjustable seat back is suitable for many different scenarios, such as feeding, playing and sleeping.
4.Remote control and monitoring help parents focus on their children while working and doing housework.
5.A baby's cradle is usually used within the age of two years, and it is rarely put away during the period of use. After the age of two, the cradle also ends its mission, so foldable storage, adjustable size and removable functions are not very important.

Overall, this product will combine the essential points and the special points with the actual needs, supplemented by my own ideas.

Idea Generations

Selected Plan

Temperature sensor:
heating/cooling function.

Guardrail automatic lifting system:
prevent the baby from climbing over the guardrail.

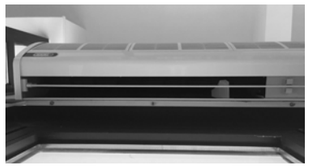
Intelligent voice system:
Start playing songs or communicating with children through voice control.

Like still in the womb:
Provide a comfortable and relaxing space.

Research of relevance technologies

Technical reference point

Air curtain in dining hall



Air curtain in supermarket

Through the use of air curtain by dining hall and supermarket for heat insulation and insect prevention in summer, I thought whether it could be applied to provide a more comfortable and safe environment and barrier for infants.

The working principle of air curtain

Air curtain is formed by air blowing out at a certain speed from the slot vent. It forms an "invisible transparent barrier" between the outside world and the baby.This prevents bacteria and dust from spreading to the baby.

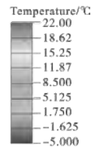
Air curtain exit speed/(m·s⁻¹)	Respiratory dust concentration/(mg·m⁻³)		Full dust concentration/(mg·m⁻³)		Dust isolation efficiency/%	
	No air curtain	Using air curtain	No air curtain	Using air curtain	Respiratory dust concentration	Full dust concentration
2	21.45	7.96	80.35	40.32	62.89	49.82
3	16.93	5.35	71.23	33.46	16.93	53.03
4	20.19	6.02	79.16	35.94	70.18	54.60
5	17.78	8.24	73.52	38.36	53.66	47.82

#Field test results of dust separation effect of air curtain

Block bacteria and dust

It can be seen that after the air curtain is used for dust separation, the dust concentration in the work area is effectively reduced. The dust separation rate can reach about 50%, and the isolation effect on respiratory dust is more significant, reaching about 70%.

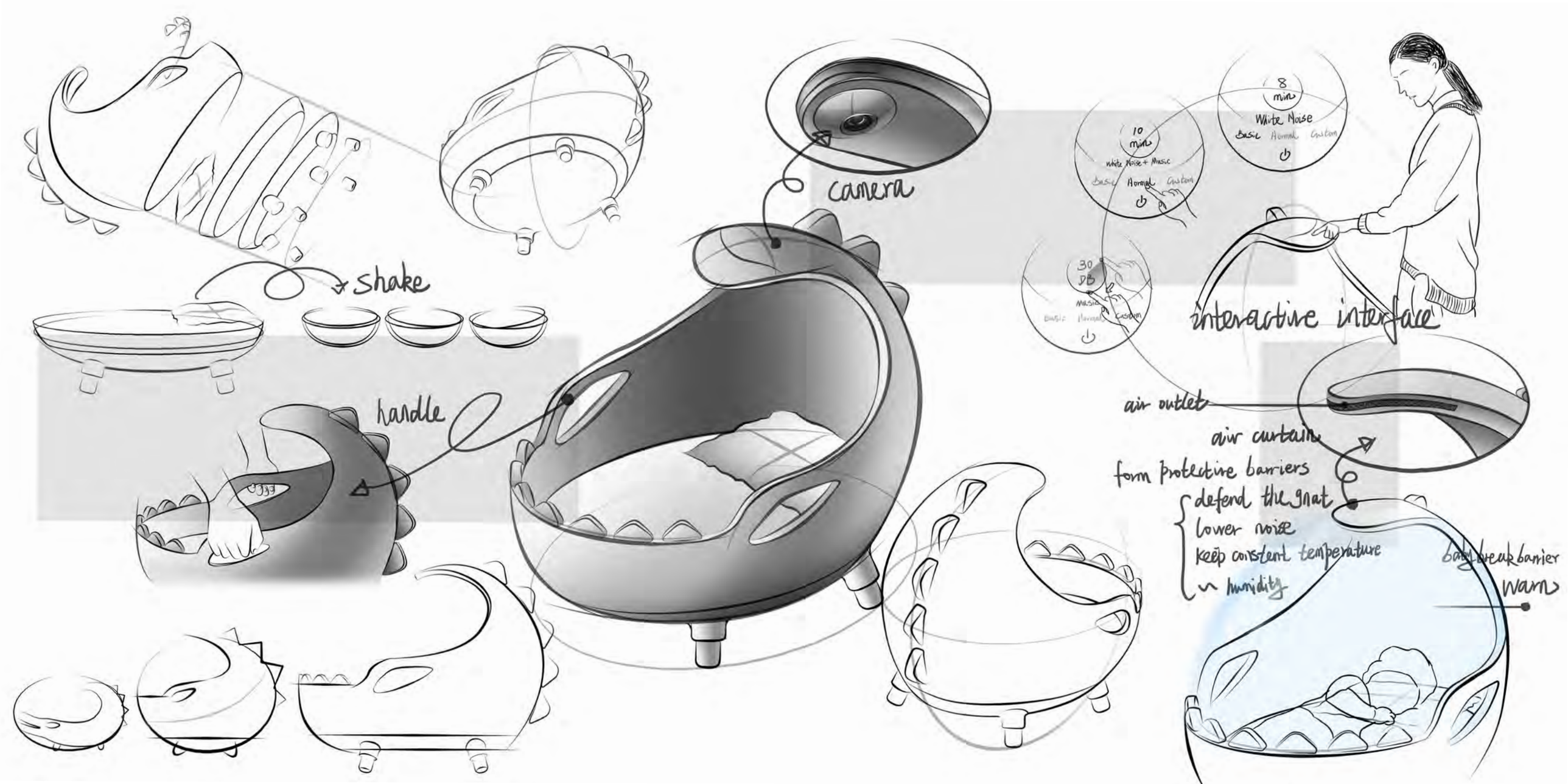
#No air curtain　　#Add air curtain



Maintain constant temperature and constant humidity

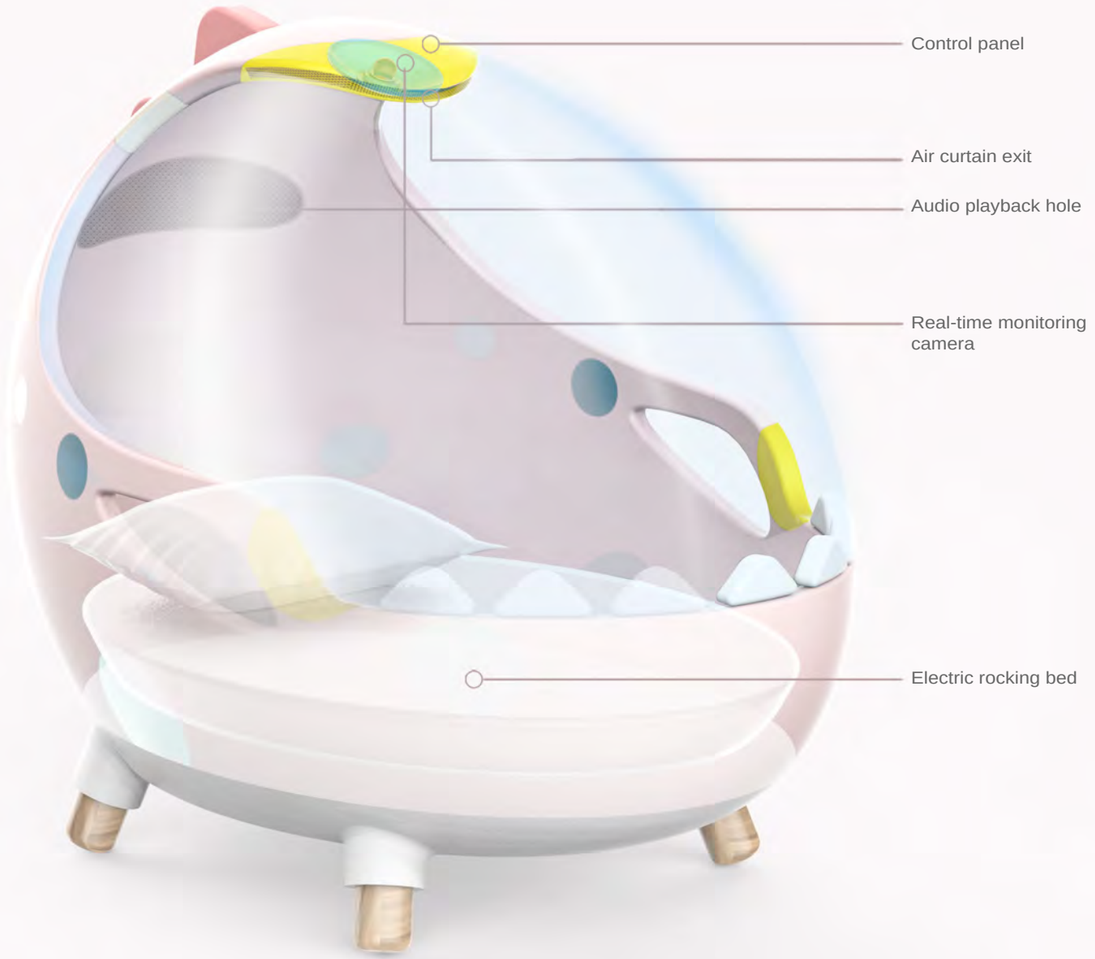
After increasing the air curtain, the overall indoor average temperature increased from 13.4 ° C to 16.7 ° C

#TAN Cong，JIANG Zhong'an，WANG Pei，JIANG Lan . Dust - isolating Parameter Optimization of Air Curtain at Fully Mechanized Working Face Based on Numerical Simulation [J] .2014.09

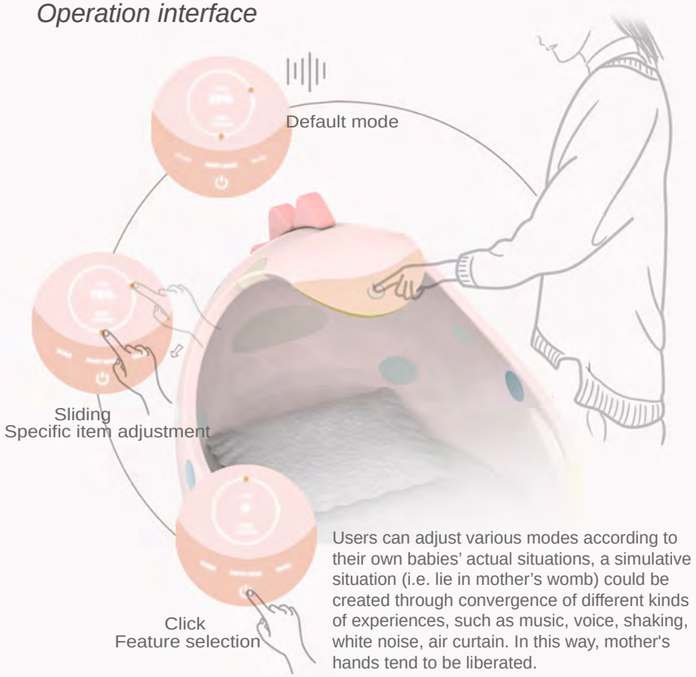

shake
camera
handle
10 min
White Noise + Music
Basic
Normal
Custom
8 min
White Noise
Basic
Normal
Custom
30 DB
Music
Basic
Normal
Custom
interactive interface
air outlet
air curtain
form protective barriers
defend the gnat
lower noise
keep constant temperature
humidity
baby breakbarrier
warm

PRODUCT DESCRIPTION

Functional distribution



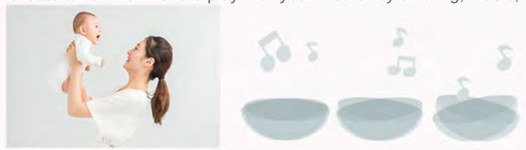
Operation interface



Users can adjust various modes according to their own babies' actual situations, a simulative situation (i.e. lie in mother's womb) could be created through convergence of different kinds of experiences, such as music, voice, shaking, white noise, air curtain. In this way, mother's hands tend to be liberated.

Basic mode
Provide an undisturbed and comfortable environment for babies who have fallen asleep.

Entertainment mode
Create an environment to play with your mother by shaking, music, etc.



Custom mode
Various functions are customizable, for instance, after babies have a meal, shaking amplitude can be adjusted to the minimum, soothing music is played instantaneously.

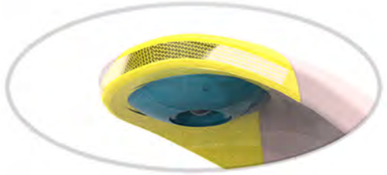
Air curtain

The air curtain automatically turns on after leaving the sensing area for 30 seconds.

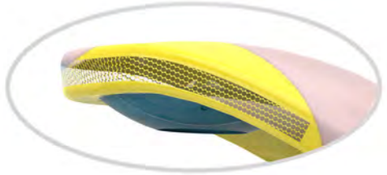
Insulate noise and prevent the intrusion of mosquitoes and dust.

Maintain constant temperature and humidity and play white noise to create a comfortable sleeping environment.

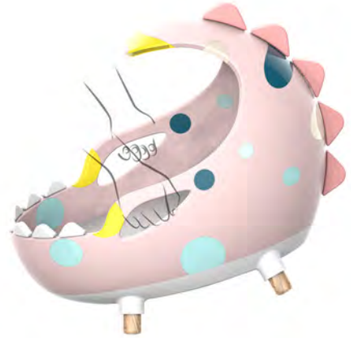
Details



Infrared transmitter and surveillance camera.

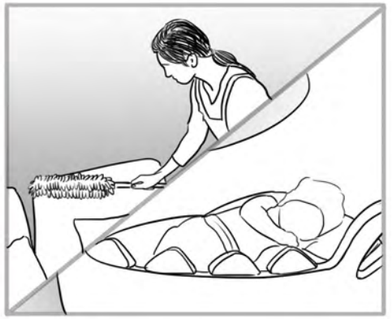


The side mesh structure is the air curtain air outlet.

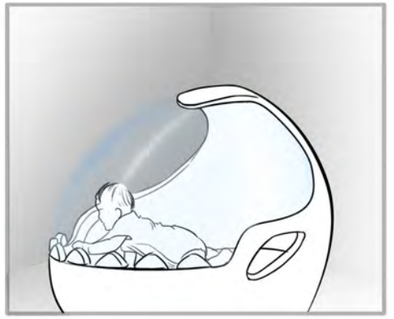


Handle for easy movement.

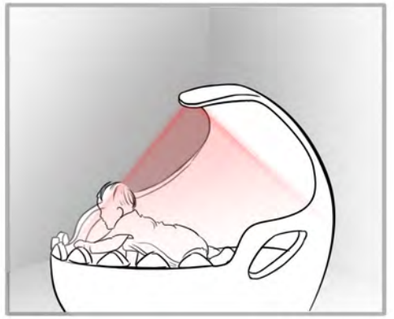
Storyboard



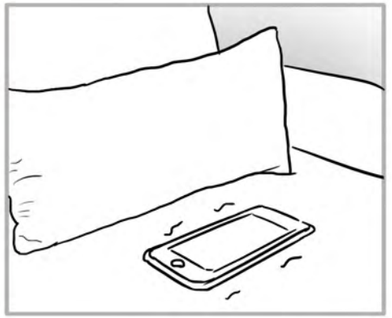
1.Mother started doing housework after the baby fell asleep.



2.The baby woke up.

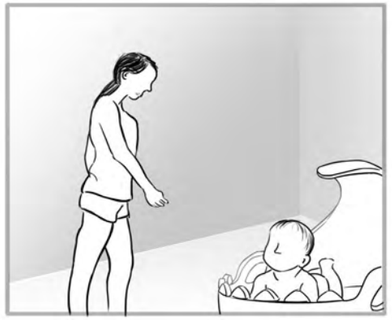


3.The baby moves outwards, and when it touches the infrared in the outermost circle, the air curtain automatically closes.



4.At the same time, mother's mobile phone will remind her by vibration.

5.Mother can talk to the baby through the phone to attract baby's attention.



6.And walk to the baby in time.

Comoara

Storing things is like hiding treasure

Blanket for storing children's toys

PROJECT OVERVIEW:This toy blanket can be easily folded into a storage box for storing children's toys, and cultivate the habit of taking the initiative to receive items by playing. For the purpose of teaching through lively activities.

DURATION: 07/2018-08/2018, 5-week

PROJECT FEATURE: Sole project

Lorem Ipsum

BACKGROUND ANALYSIS

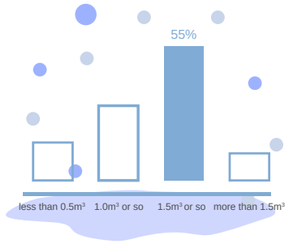
Discovery of issues

Going to my cousin's house, I saw that the child's playground occupied most of the living room. My cousin said: "Child plays every day. However, it takes a lot of time to clear up a large number of toys, so we can only throw it on the toy blanket and get whatever she want to play with."

What harm does this cause?

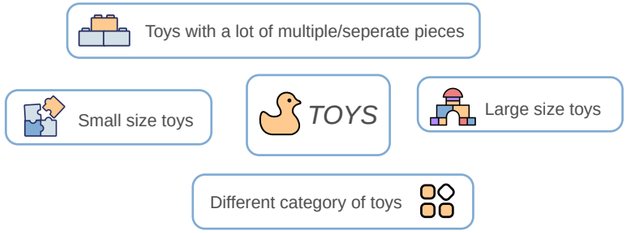
1.Toys are piled on blankets that looks messy.
2.takes up a lot of space and affects the normal walking at home.
3.It will accumulate a lot of dust after a long time, and when the child goes to play with toys again, the bacteria will enter the child's body through touch.
4.Children do not form the good habit of clear up from childhood, even children may think it's okay to leave things out of place.

Related research



Based on the analysis on the data obtained from the sample, toys whose total volume is between 1 m*3 to 1.5 m*3 take the biggest proportion. Therefore, we assume the volume 1.5 m3 of the container could basically meet the storage needs for most children.

What toys deos it need to hold?



Why don't kids clean up?

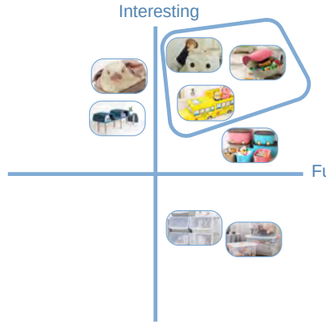
Children don't like cleaning up.

See it as a chore.

Cleaning up is hard and tiring.

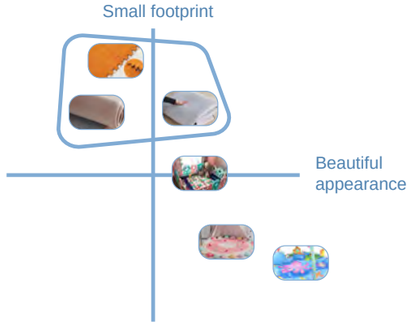
We hope that it has fun and fun interactions, can accommodate different types of toys of different sizes, and allows children to develop the habit of cleaning up while playing.

Analysis of existing toy storage products



There is no good balance between interesting and functionality.

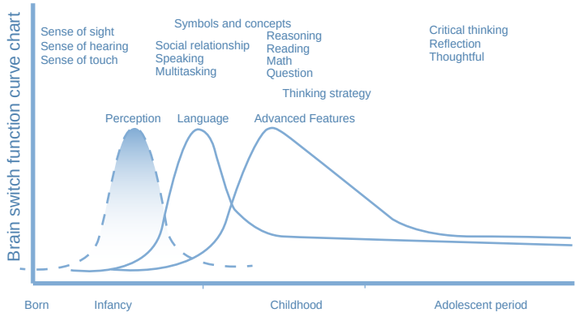
Analysis of existing toy carpet products



The contradiction between beauty and size is not well solved.

Balance the functional and fun relationship between toy storage and solve the contradiction between the aesthetics and volume of the blanket. Then combine the characteristics of the two, entertaining and learning, and encourage the children to develop the habit of finishing, reducing the burden on the mother.

Research on the Necessity of Cultivating Independent Arrangement in Early Childhood Stage



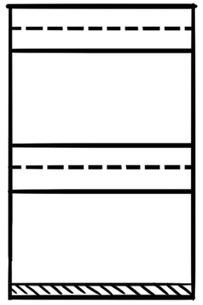
According to the above figure, perceptual development begins before a baby leaves the womb, and it reaches the peak in the preschool stage period. However, the distinctions between perception curve and language as well as other advanced brain functions curve lie not only in earlier development, but also the close of the perceptual development channel in the middle stage of the childhood. On the other hand, the development curve of the language as well as other advanced brain functions begins to decline after it reaches the peak while this development channel would never shut down. Thus, it shows that early childhood is the best stage for the development of sensory and perceptual abilities, in addition, it is also the best stage for the cultivation of children's self-organization habit.

PROJECT EXPRORATION

The initial conjecture

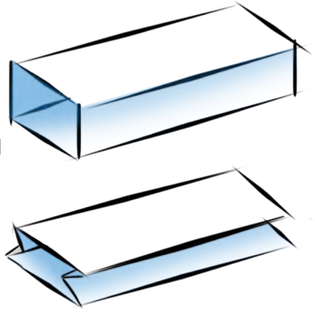
The shopping bag could be unfolded from the plane to a three-dimentional shape so that items could be bagged. From this perspective, I wonder if a storage blanket could be invented by means of application of this (or similar) methodology.

Analytical steps



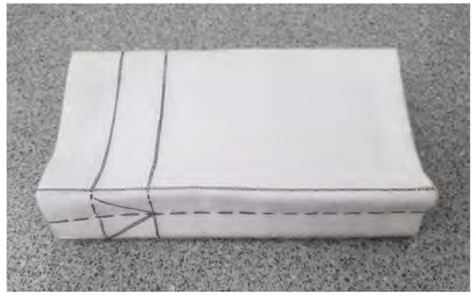
Fold

Inverse fold



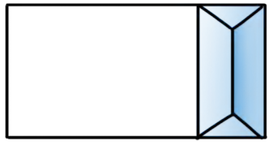
And then fold up into a square box

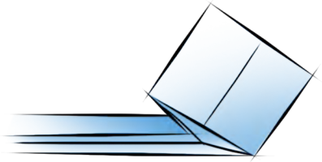
Make simple models

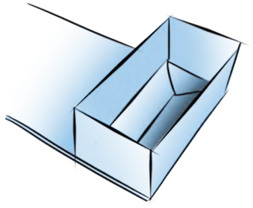


Where paper is glued together

Planform

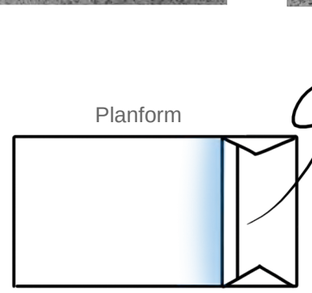


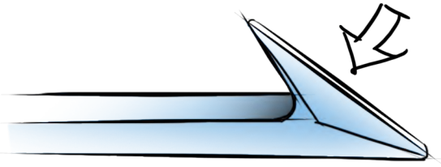


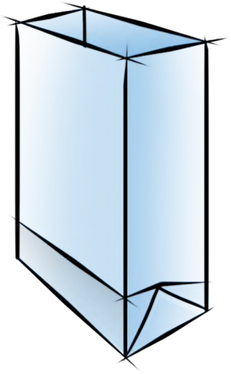


Glue the pape

Planform







Reach inside the box and unfold

scenario simulation

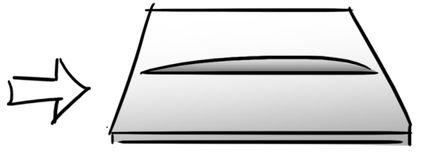
Play on the toy blanket

Tidy up toys

Put the toys in the buggy bag

Find a problem

I have to push the toys to the floor before i put it in the buggy bag.

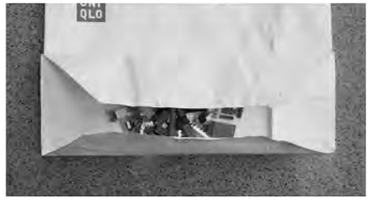


Conjecture

Can the toy be placed directly into the inside of the toy blanket through making a gap in the surface of the blanket?

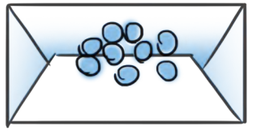
PROJECT DEVELOPMENT

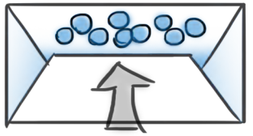
Further conjecture



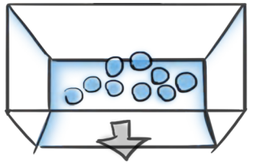
Hypothesis 1: our storage blanket consists of 2 layers, toys would be contained into this blanket when we fold the upper layer of the blanket.

Hypothesis 2: Toys would be contained into the blanket through simultaneously lifting the two sides of the blanket (it seems more straightforward).

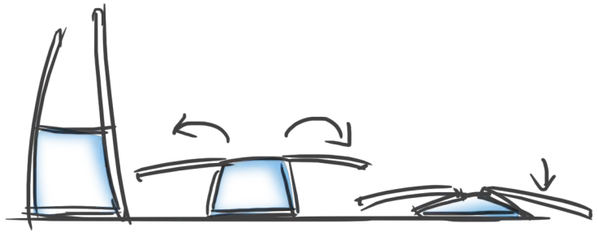




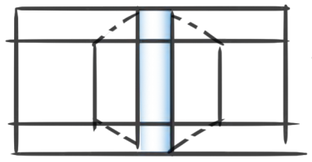
Push the toy aside

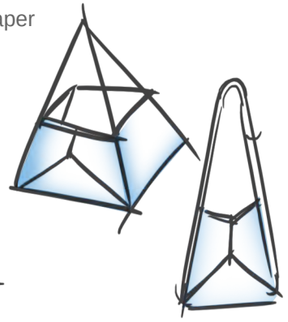


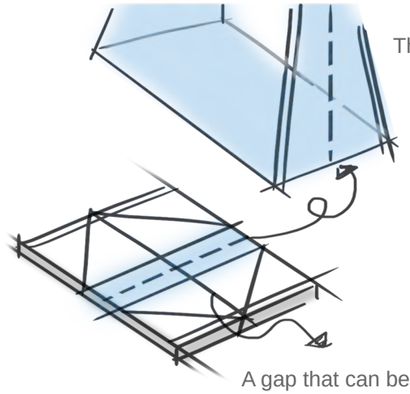
Open one side of paper and load toy



Lift up the two sides of the paper

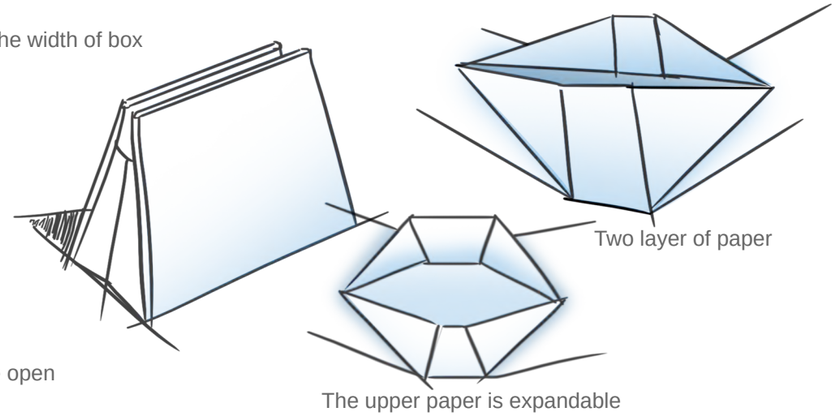






The width of box

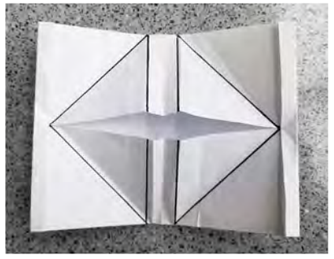
A gap that can be open



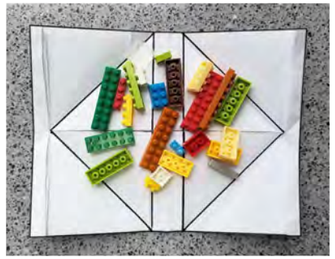
Two layer of paper

The upper paper is expandable

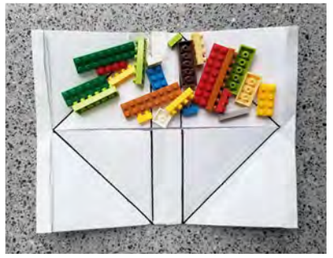
Steps to use & Areas for improvement



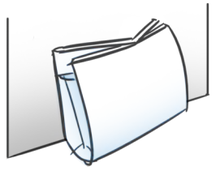
1.Toy blanket



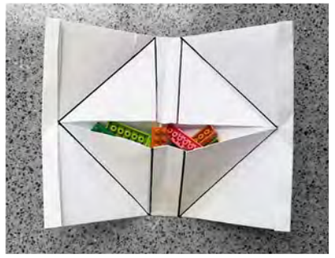
2.Put toys on the blanket



3.Push the toy to the side of the blanket



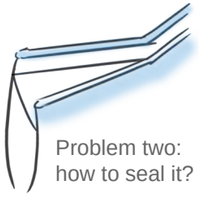
Problem one:The width of buggy bag is too narrow, so bag had to lean against the wall.



1.Hide toys in the gap

2.Lift up the sides of the blanket

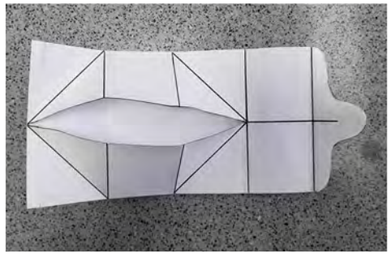
3.Close it

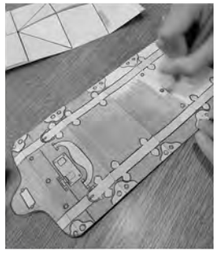


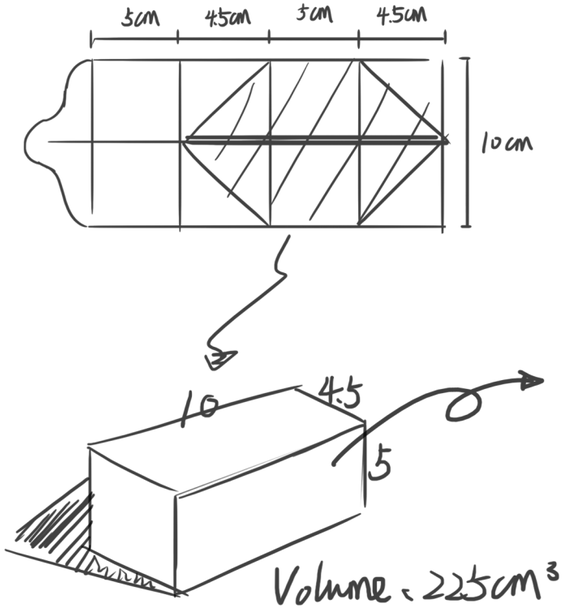
Problem two: how to seal it?

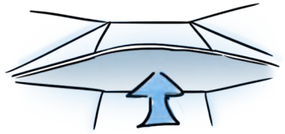
FINAL DESIGN & USER SCENARIO

Model making

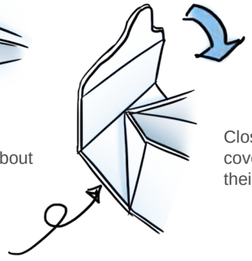




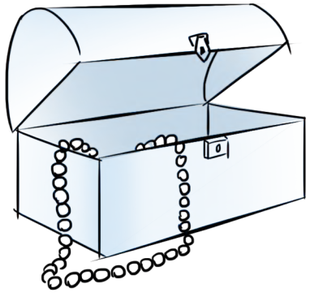




Push toys into gaps is child's possessiveness and curiosity about the unknown world.

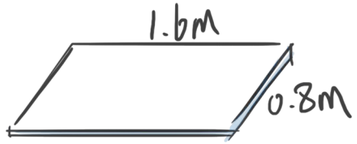


Closing the dust cover is like closing their little secret.



Every child has his favorite toy. For him, toys are mysterious treasure, he need a secret base to hide treasure. No one knows what he has in his treasure chest except himself.

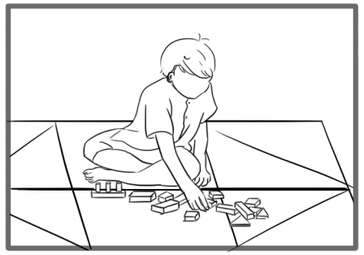
$$\frac{1.5m^3}{0.0225m^3} \approx 66.7$$



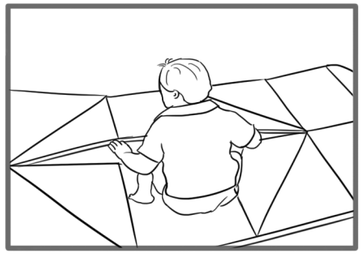
Product volume

Based on the size of the toy investigated before, I calculated that the actual area of this blanket was 0.8 meters times 1.6 meters.

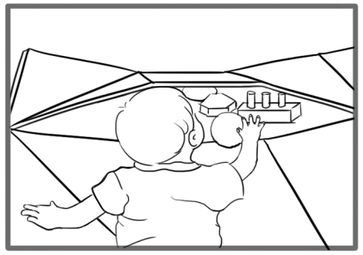
Storyboard



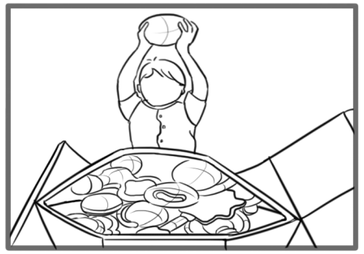
1.The child is playing on the toy blanket.



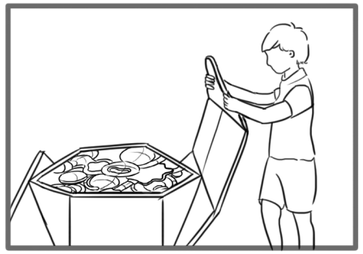
2.He found a gap in the blanket.



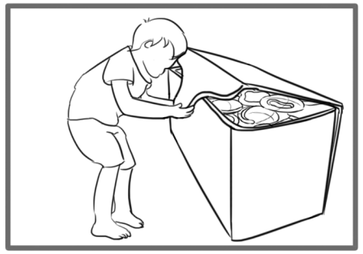
3.He stuffed the toy into the gap.



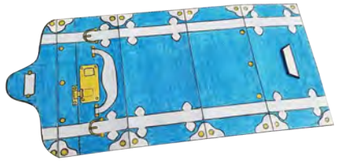
4.The toy expanded the blanket into a box.



5.Lift the dust cover.



6.The child fastened the lock.



The Soul Of The Chinese Nation

hàn zì

Watching, Writing & Speaking

Chinese character recognition and reading and writing system targeting at mandarin learners

PROJECT OVERVIEW:Providing a new experience for non-native Chinese learners to learn Chinese characters through the form of stroke splicing and pattern derivation.To make users gradually familiar with the writing rules of Chinese characters in the game instead of rote memorization.

DURATION: 11/2018-12/2018, 4-week

PROJECT FEATURE: Sole project

BACKGROUND ANALYSIS

Problem finding

Chinese characters embody the wisdom of the Chinese nation, the soul of the Chinese nation and the rich cultural connotations. Chinese characters show the ideographic features of hieroglyphics and the macroscopic concept of "harmony between heaven and man". However, it is precisely because of the unique ideographic features and structure of Chinese characters that are faced with a seemingly ‘‘unreachable mountain’’ and are generally afraid of difficulties.

Chinese mistakes when using English.

For any native English speaker, it’s hard not to laugh when you see a signpost pointing the way to ‘The Racist Park’ or a restaurant menu offering you a dish with the “smell of urine”. But foreigners aren’t exactly innocent when it comes to using Chinese, and often with much more lasting consequences.

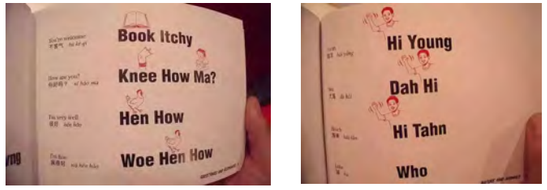
Foreigners’ mistakes when using Chinese

35%of NBA stars have China-themed‘ink’

Chinese tattoos have long been popular in the West, perhaps now more so than ever. According to a report by Xinhua, up to 35% of NBA stars have China-themed ‘ink’, reflecting the widespread notion that there is something meaningful or at least aesthetically pleasing about Chinese characters.

(Chinese character tattoo)

But given that the vast majority of people getting these tattoos don’t read Chinese, and the people giving them don’t either, there is huge room for mistakes to be made. Sometimes in quite spectacular fashion.



(The textbook of the Chinese character learning institution)

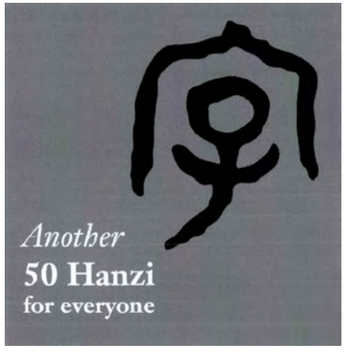
Influenced by the teaching thought of "the supremacy of learning pronunciation", the need of "learning a few everyday words" has been widely valued in the teaching of Chinese as a foreign language, while the need of "understanding the shape of Chinese symbols and unique ways of expressing meanings" has not been fully valued. And because of the Chinese character glyph learning books are boring and so on reasons, situations like learners only know the sound of the character but do not know its glyph or meaning happen.

Investigation and Analysis

As learning Chinese characters has become a popular trend, the writers of relevant books divide the characters into different symbols, so that learners' visual resistance to Chinese characters is reduced to an acceptable level. There are more and more cases of trying to use the original pictographic design textbooks of Chinese character glyphs. The following are two typical examples of many attempts made by designers.

《50 Hanzi for everyone》

This manual strives for a clear and concise visual experience. It introduces 50 Chinese characters like the "mark" reading introduction, and is accompanied by an explanation of the English interpretation. Moreover, since the manual regards Chinese characters as marks, it is intentionally to isolate the glyphs from the pronunciation, and the pages that introduce the Chinese characters one by one are not marked with pinyin.



《Another 50 Hanzi for everyone》

This book is more inclined to express the evolution of Chinese characters. Therefore, compared with the manual mentioned above, its ideological innovation and design experimentalness are weaker, but it is more rational in understanding.

By visiting teachers who are teaching foreigners and international students in the school, they said that these two manuals are not very interesting. Because it is too experimental, the design of the manual is destined to be an "experiment" for the introduction of Chinese as a foreign language - in actual life, no one is willing to read the manual. From this, I realized that to advance this research and improve the existing design, we must deepen the understanding of the Chinese character system, and carefully examine the design techniques and visual language that express the pictographic features of Chinese characters.

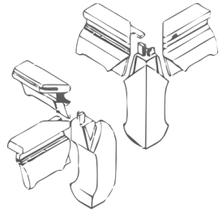
Part of the background analysis refers to the website： http://onchina.blog.caixin.com/archives/69640

Thinking about the way of combination

In the process of writing, the core of the Chinese character system is stroke, the "parts" of strokes could be combined to form different glyphs. Therefore, I wonder whether this feature can be combined with other ways to make the learning process more vivid and no longer just stay on paper.

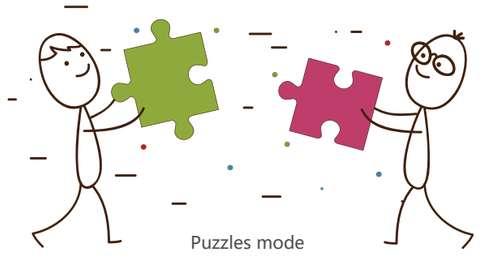
(A word can be split into multiple "parts" in the Chinese character system)

The combination of "parts" recurs us to the jigsaw puzzle or tetris, or more complex traditional Chinese way of assembling mortise and tenon.



Mortise and tenon joint structure

Tetris



Puzzles mode

Design conjecture

The combination of "parts" recurs us to the jigsaw puzzle or tetris, or more complex traditional Chinese way of assembling mortise and tenon.

人、化、大、立、
身、女、子、好、
母、目、自、面、
口、耳、肉、心、
手、看、又、左、
右、友、步、是、
天、日、月、气、
雨、水、火、土、
小、山、木、果、
犬、鱼、羊、夫、
牛、马、刀、分、
太、力、男、米、
家、你。

Split the strokes of Chinese characters into modules

Through observing the configuration of the 50 words, i found that there are a large number of common parts in the glyph, taking the following glyphs as an example.

人 大 天 火 夫 太 犬

大 人 一 天 人 二

火 人 丿丿 夫 人 二

太 人 、 犬 人 、

Obviously, the common features of these glyphs are built around the "part" of "human (人)". On the basis of the case study "50 hanzi for everyone" on the previous page, the "cognitive reading and writing" system can be constructed to increase the sense of participation for learners by means of stitching. In this manner, they are able to better understand the existence of "stroke order".

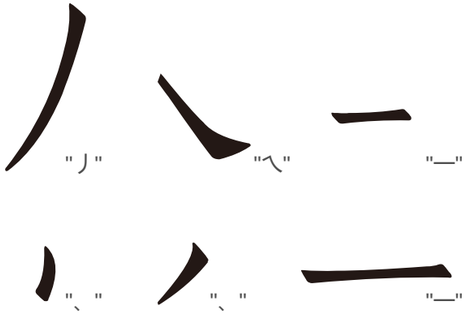
PROJECT EXPLORATION

Extract and organize “part”

By consulting the dictionary written by the authoritative organization of our country, we can get the following "parts" of strokes.

(Basic strokes of Chinese characters)

Take seven glyphs "人" as the main body(on the right of the previous page) as an example, make the following stroke "parts"

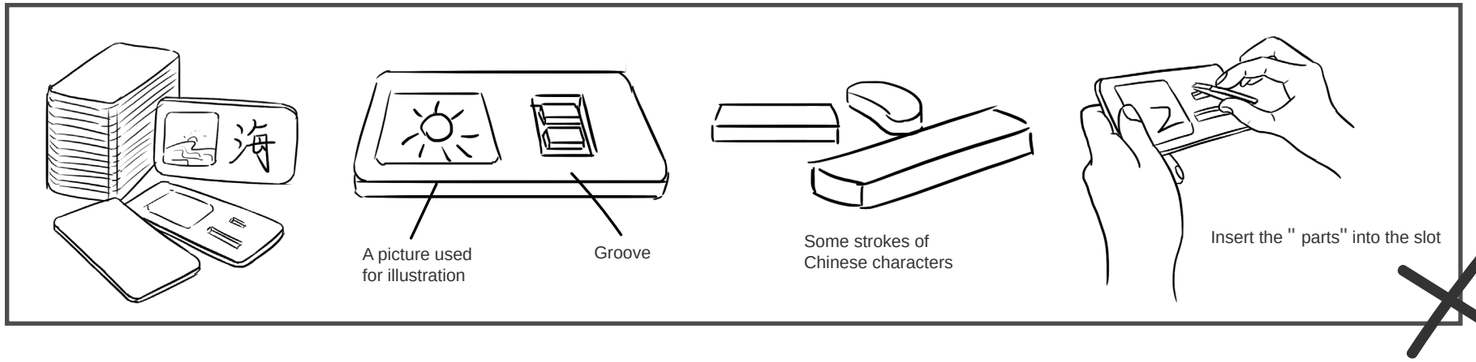


Discussion and research on the way of use

Through face-to-face communication with international students, I get the following key information.

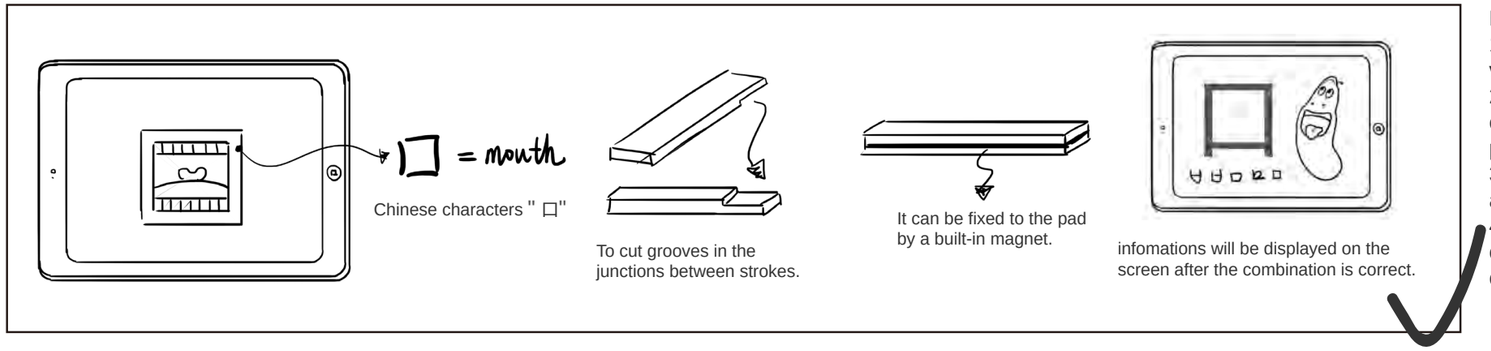
1. Most of the foreign students' oral expression is relatively accurate, and there is no communication barrier in the communication
2. Their lecture notes are all in English because they hardly know Chinese characters.
3. They think it is important to learn Chinese characters, because when you go to the supermarket to buy something, you will have to read the Chinese characters on the packaging.

Plan A



Feedback:
1. Too esay and too boring.
2. Too many CARDS are needed, which takes up a lot of space and is cumbersome to use.
3. There is not enough connection between strokes.

Plan B

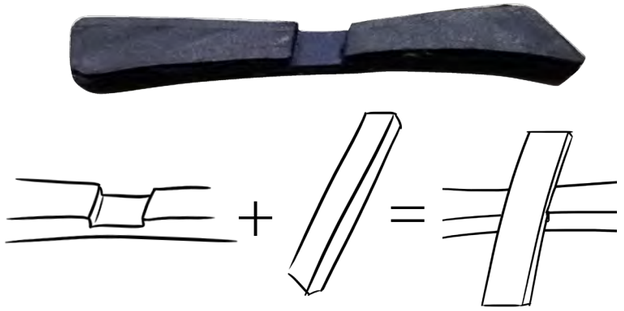


Feedback:
1. Reduce the total volume of the product.
2. Learning form changes from one-way completion to feedback.
3. The shape and origin are more impressive.
4. Users will find the rule of the strokes during the combination process.

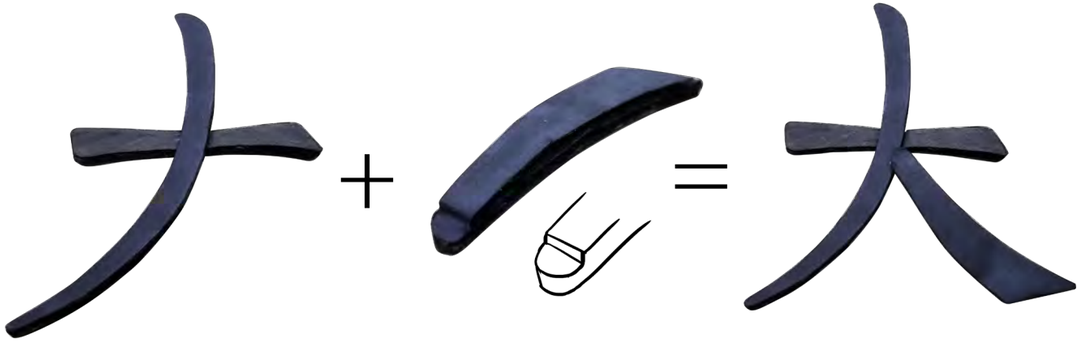
FINAL DESIGN

Production and interpretation

I don't write a specification for these "parts" or this game. I expect users to find the rules of Chinese handwriting when they splicing.



In the writing rule of Chinese characters, "horizontal line(—)" is the earliest to be written, so I designed it to have an upturned groove, waiting for the next stroke to be combined with it.

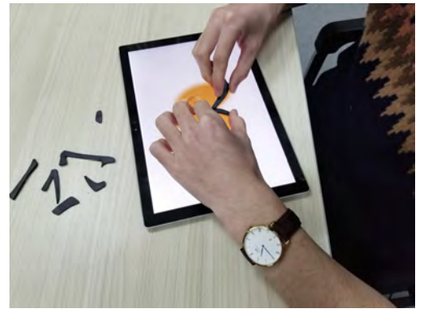


And"丿" is before the"㇏".So I design "㇏" to have a downward groove.

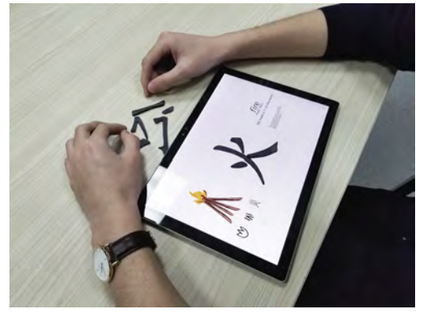
"、" is free because it can appear in any part of Chinese characters, but it is interesting that "、" has different shapes in different positions.

Steps and scenarios

Look for strokes that can be used to combine through patterns and grooves.



Fix them on the screen through the internal magnet.



A detailed explanation will be displayed on the screen after the combination is correct.

Along With The Travel

ALONG WITH THE TRAVEL

PROJECT OVERVIEW: Let us no longer be limited by trifles. We all want to be released and needed in the vast sea of people, we wish to meet a better self in the journey.

DURATION: 11/2018- 12/2018, 7-week

PROJECT FEATURE: Team project (2 people in total)

With “Friends”

Travel APP

DESIGN WORKSHOP

Background representation

Workshop participants: 72 travel enthusiasts (20-30 years old)

Moderator: 1 person

Time: 25/09/2018, limited to 45 minutes

Theme: Because everyone has the hobby of travel and have encountered some problems during the trip, this workshop takes "tourism" as the core word, discusses around the Service Product and locates it as app. After the free discussion, each group chooses a representative and explains the reasons for choosing him. Finally, the host selects four of them to accept everyone's turn to ask questions.

Note: Participants are equal and randomly grouped. Advocate free speech and arbitrary thinking, but everyone need to focus on "tourism".It is forbidden to criticize and comment on thoughts of others and advocate independent thinking. Encourage clever use of thoughts of others and keep thinging. Do not emphasize the good or bad of personal thoughts, aiming to stimulate more new ideas. The questioning session can only be asked twice.

Interview

(He travels all the year round in the northwest of China, experiencing different customs and experiences.)

Q1.Which local culture makes you impressed on all your journeys?

A1.Guizhou is the place that impressed me the most. The local wine culture is very strong. You can even smell the mellow smell of the wine in the air. Fortunately, I experienced it with the local friends, because the wine in the ordinary restaurant is the same as our usual drink. But under the introduction of the locals, what I drink is not the same as what I usually drink. It is a more natural taste.

→ Local culture and local guide

(She studied abroad for one year.)

Q2.Are you having an unforgettable experience while flying?

A2.The most memorable thing was the day I went to Korea. When the plane flew in half, the flight attendant said that there was a cloud mass in front, and the plane would have a bump for a long time. At that time, I was very worried. I blamed myself for choosing to fly. Why didn't I see the weather in advance, I was afraid of dying, but in the end it was safe.

→ Weather, transportation and safety

(She has traveled more places and has rich travel experience.)

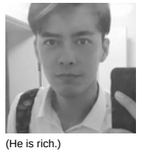
Q3-1.What is the biggest trouble you have encountered while traveling?

A3-1 Cash is running out on the tenth day of travel in Japan, and unlike in China, payment is only required by APP.I can speak a little Japanese, but my friend can't, so I really didn't know what to do at that time. I wanted to find someone to help us, but I was afraid that what I said might not be understood or misunderstood.

Q3-2.So what kind of skills do you think travel companions should have?

A3-2.I hope the travel companions can speak the local language. for example, if we go abroad, we can at least speak some simple life expressions.Or he has a wealth of experience and can be my guide.

→ Emergency situations, guideline and communication



(He is rich.)

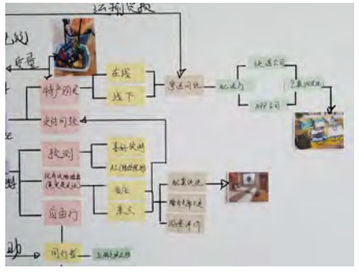
Q4.What is the biggest problem for travel to you?

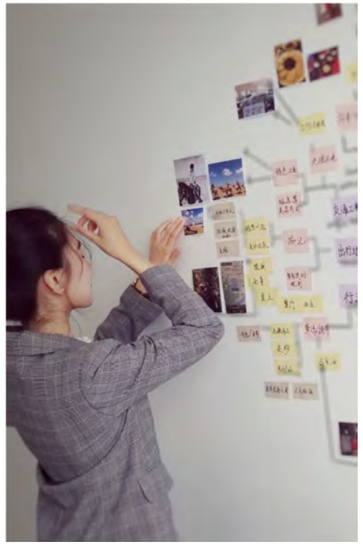
A4.Money, hahahaha, this is just a joke, but it is also a big problem for the students. Personally speaking， The most troublesome thing about me is that I bought a great number of tourism products but I can't bring them back.

→ Baggage and problem in purchase

After workshop, we assign 2 people as a unit to conduct key information extraction based on the results from workshop and interview. After the analysis, the problems that are easy to encounter with in journey (circled above) are thought divergently.

Mind map





CUSTOMER JOURNEY MAP

Conceptual Background:
This map was drawn according to the discussion results of the workshop, based on which the divergent thinking is conducted as well. We may find relevant pain points or opportunity points after examining almost all situations that a single user might encounter during the whole trip under the exsiting circumstance.

MAY KEY
Service elements

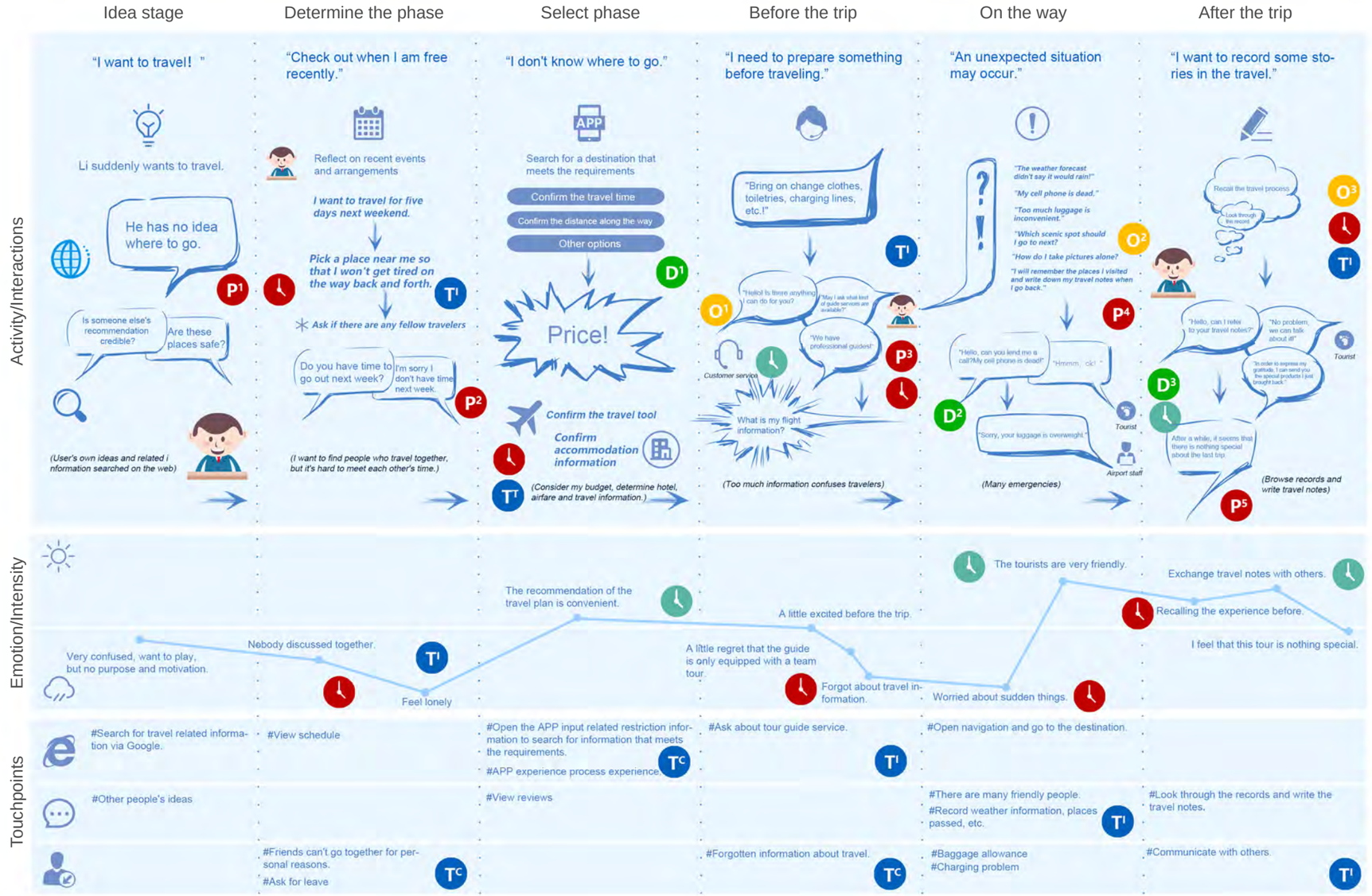
- P1 Point of pain(doesn't work)
- D1 Point of delight(works well)
- O1 Opportunity

TIME

- Time spent(positive)
- Time spent(negative)

TOUCHPOINT TYPE

- T1 Interact(person 2 person)
- T2 Transact(progress process)
- TC Confirm(process reassurance)



Opportunities to improve/enhance service

- O1 At present, the guidance service still stays in group travel level, and there is no or a lack of guidance service for individual travel enthusiasts. At the same time, tour guides are usually not local people, which means it would be hard for tour guides to help tourists they are responsible for to integrate into the local culture and community.
- O2 For individual travelers, it is possible to encounter some unforeseeable situations. However, if you are unfamiliar with new surroundings, it would be difficult to ask someone for help.
- O3 After the trip, let's suppose you want to leave some memories for yourself, but you probably have no idea on how to write travel journals, then you decide to share the notes and communicate with others, and look over the notes you took on notebooks for the purpose of recalling your experience.

Point of pain and possible mitigation

- P1 At the thought stage, users are frustrated by aimless searches.
- P2 In the pre-departure stage, it is difficult to find a partner because he may not be available.
- P3 During the selection phase, the lack of guides for tourists has a poor travel experience. O1
- P4 After the tour, there are not enough surprises and deep memories. O2
- P5 During the selection phase, the lack of guides for tourists has a poor travel experience.

Point of delight

- D1 The recommendation and search function of the existing travel app is perfect enough, so we can learn from it.
- D2 Helpful tourists are very common and are the root of the development of mutual help systems.
- D3 Existing travel sharing forums or blogging systems are mature enough, so we can learn from it.

FUNCTION MAP OF APP EXPECTED IMPLEMENTATION

Conceptual Background: This chart conducts an in-depth analysis on the three opportunity points and five pain points obtained from the customer journey map, and it conceives the "architecture" of the initial functions of the app.

O1 P1

MAY KEY
Service elements

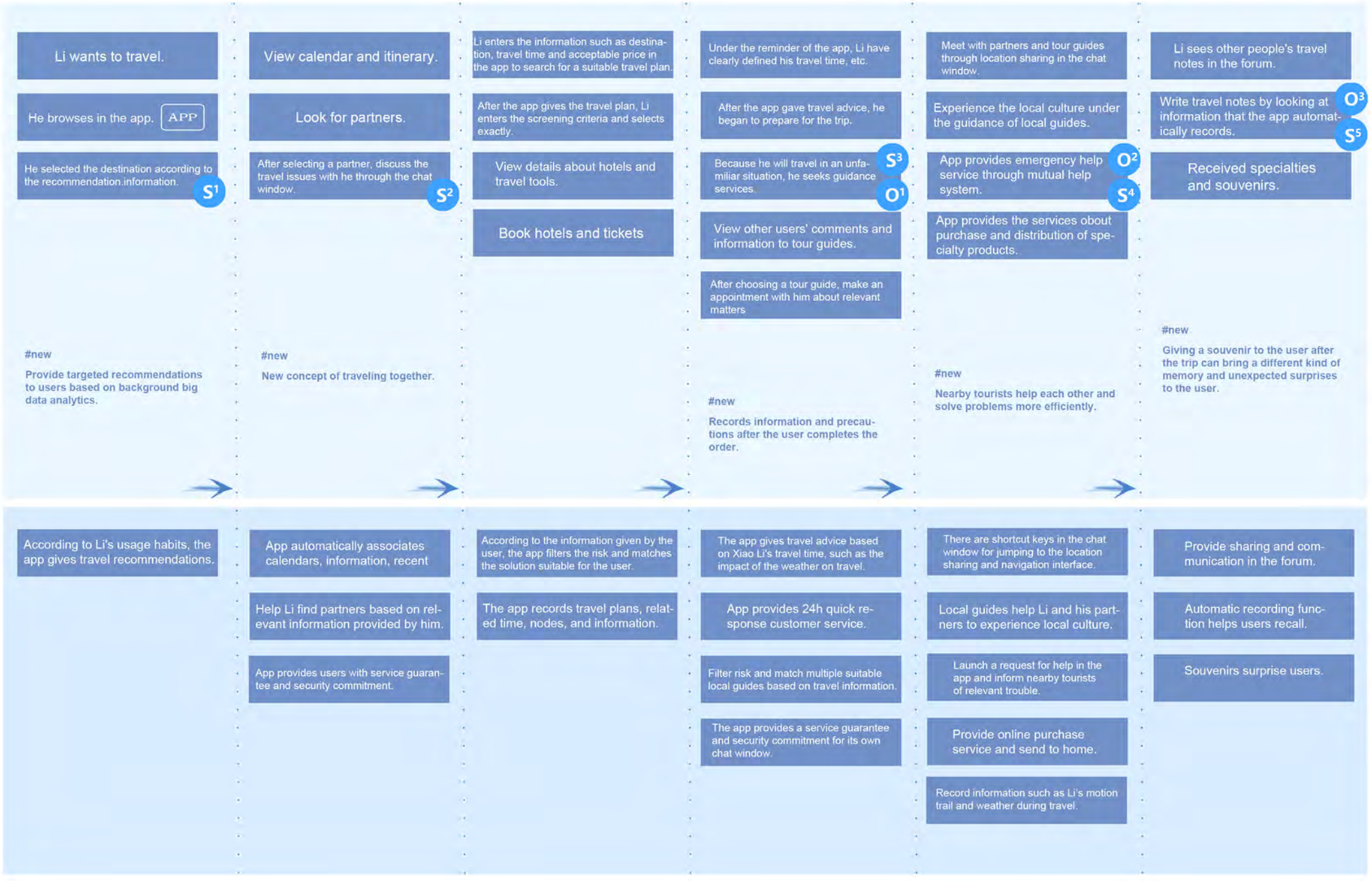
O1 Opportunity to improve O1

S1 Solution of pain points P1

#new Innovation in new ways

What the user might encounter

The service provided by app for users



Opportunities to improve service

O1 This blank space can be exploited by taking advantage of local people.

O2 Use nearby tourist resources to help each other.

O3 Add forum in the app.

Point of pain and possible mitigation

S1 Big data can be used to analyze user behaviors and give corresponding recommendations.

S2 We can try to intelligently match the same destination visitors and make a trip.

S3 We can exploit the local advantages of the local people to give the most direct and best guide experience.

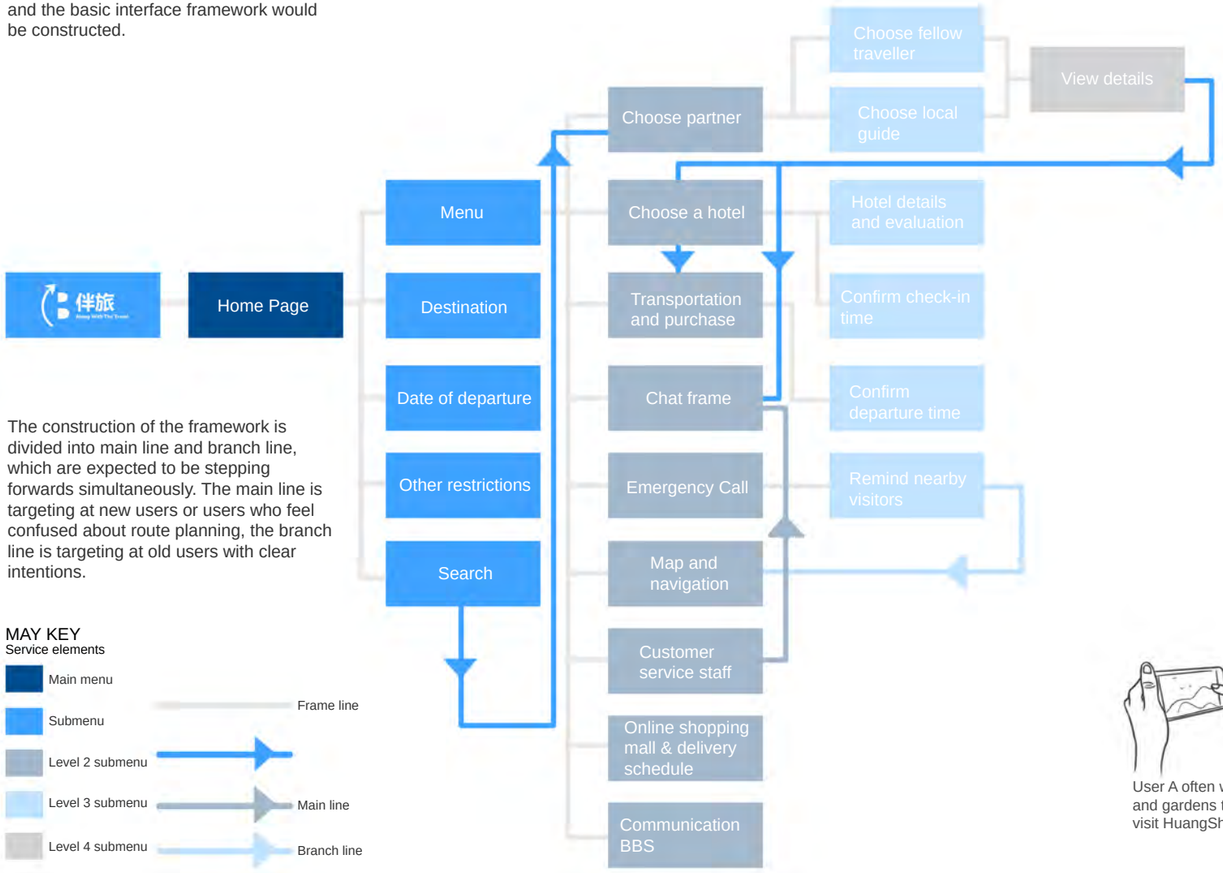
S4 Nearby tourist resources can be used to help each other.

S5 The existence of souvenirs makes users' memories of the trip more profound.

INITIAL IDEA OF THE APP INTERFACE

Framework construction of the app's usage process

Furthermore, corresponding solutions to these points would be discussed in depth and the basic interface framework would be constructed.

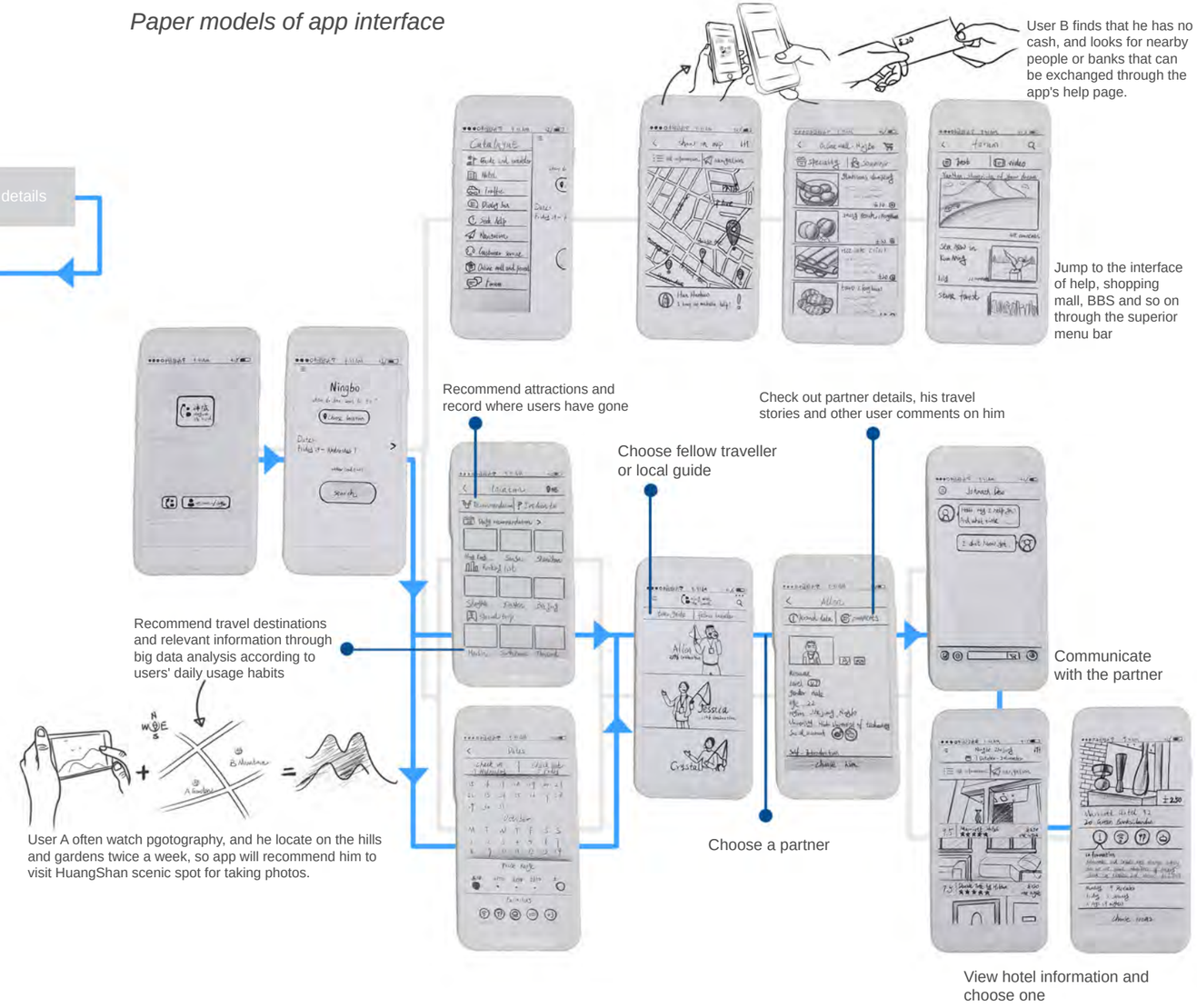


The construction of the framework is divided into main line and branch line, which are expected to be stepping forwards simultaneously. The main line is targeting at new users or users who feel confused about route planning, the branch line is targeting at old users with clear intentions.

MAY KEY
Service elements

- Main menu
- Submenu
- Level 2 submenu
- Level 3 submenu
- Level 4 submenu
- Frame line
- Main line
- Branch line

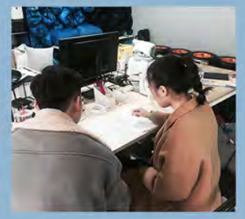
Paper models of app interface



APP RESULTS SHOW

Conception of logo

Interview



Ask the travel operator about the content and interface of the app.

1.There are too many travel apps on the market, and they are all similar.The biggest problem we need to solve is how to highlight our innovations. Therefore, we need to retain and in-depth study of the innovation of the app, such as the concept of fellow traveller(local guide) and mutual assistance. However, other services such as hotel reservation and ticket purchase are provided by jumping to the big platform, because they have unparalleled advantages. This has solved both its own weaknesses and its own advantages.

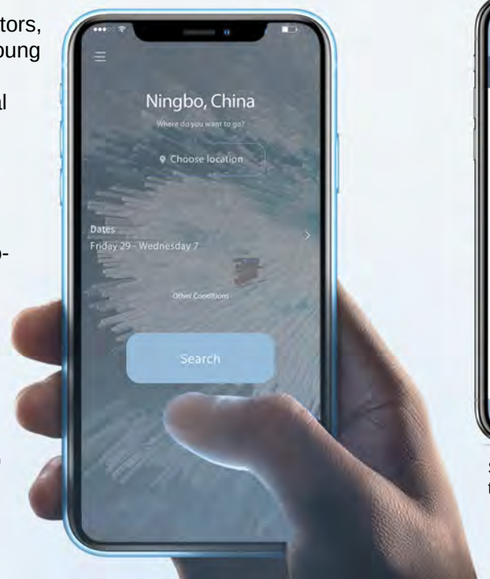
2.Another point is that we need to know the positioning of the app. It is obvious that couples or family members have little chance of becoming fellow travellers, so this app is mainly for single people and students. This group of people is generally around 20-30 years old, but now the interface color is too mature and commercial. Can't attract young people.

3.The tour guide of the travel company is not allowed to do other part-time jobs, so the person who becomes a fellow traveler must be a college student or a travel enthusiast because they can make money and travel at the same time. Therefore, the interface of introducing fellow travellers should be richer, for example, to attract young people through travel videos or photos.

Based on the suggestions we received from the operators, we adapt the interface color to meet the taste of the young group. Besides, our main competitive advantages are featured as the functions of fellow travelers and mutual assistance.

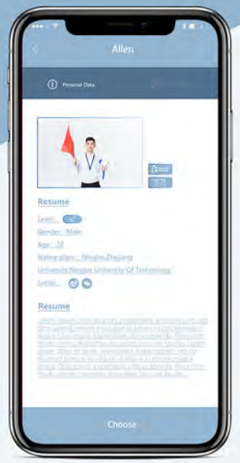
The original color was too commercial mature and rational, which is not in line with the positioning of the app.

The color after reducing saturation is more gentle, which is in line with the personality or disposition of its targeting customers — young people aged between 20 to 25, most of which are single.



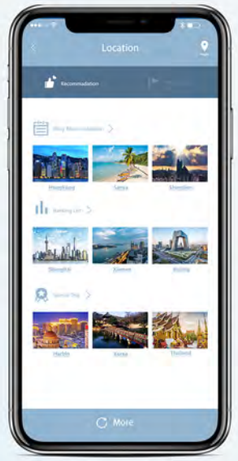
App main interface

Selection page of fellow traveller(local guide)

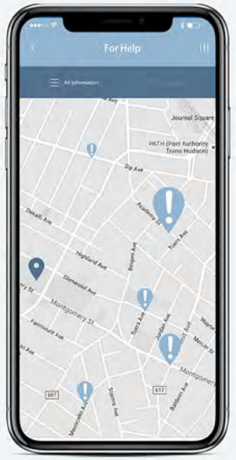


Personal information of fellow traveller(local guide)

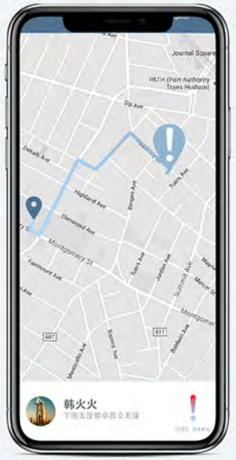
Chat window



Select and recommend travel destinations



The page of seek help or mutual help



Navigate to someone who needs help

Thank You