

# **PORTFOLIO**

*LIU YUTONG*



劉羽童

✉ lytssnmdl@gmail.com

📞 080-7509-7583



# Liu Yutong

## INTERACTION DESIGNER AND HCI ENGINEER

### EDUCATION

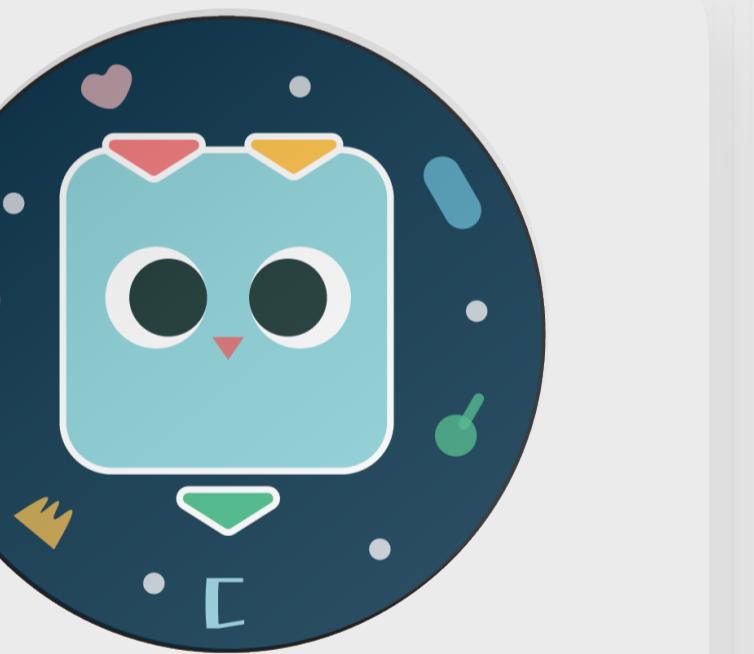
- 2023- Ph.D, College of Design & Innovation, Tongji University
- 2019-2022 Master, College of Design & Innovation, Tongji University
- 2014-2018 Bachelor, School of Communication & Information, Shanghai University

### INTERN EXPERIENCE

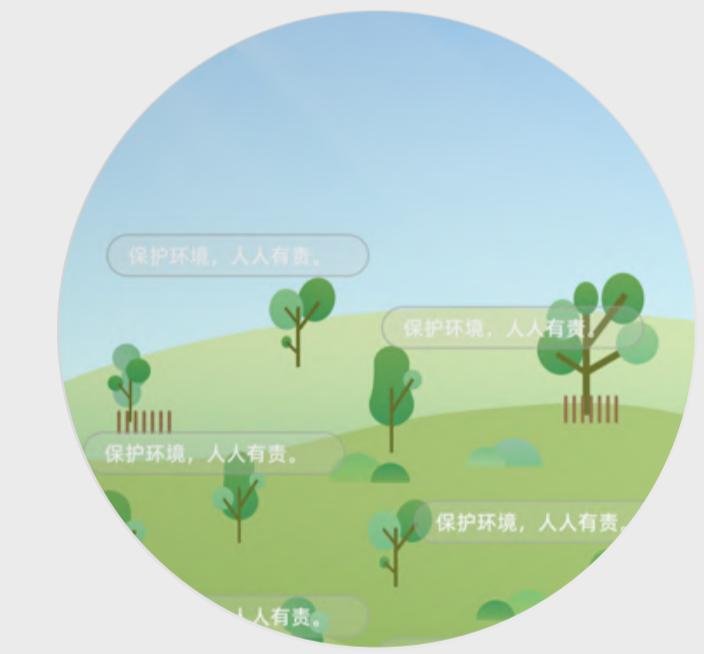
- 2020.07 **BIGmind Innovation**  
Interaction Designer.
- 2018.07 **Microbridge Shanghai**  
Front-end Development Technician.
- 2017.06 **ZTE — Shanghai**  
Baseband Development Assistant Engineer (Intern).

These are some projects and experience during my master degree, which includes service design, product design, interaction design, brand design and multidisciplinary design.

# CONTENTS



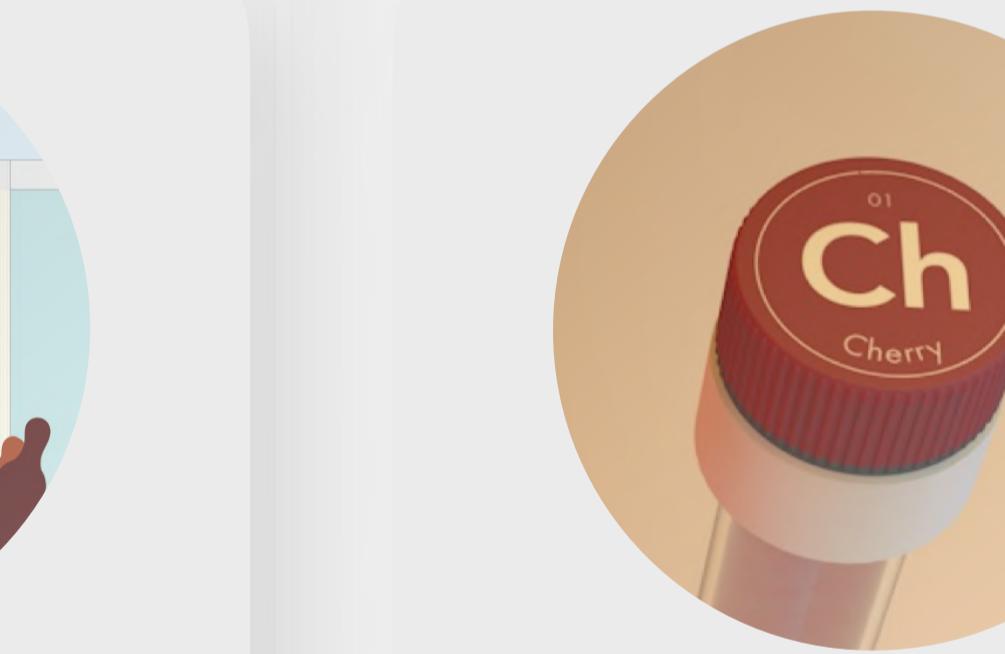
01 Cube



02 Ant Qingyi



03 闹市书苑



04 Ice Lab



# CUBE - Is there a new entry point for municipal waste classification?

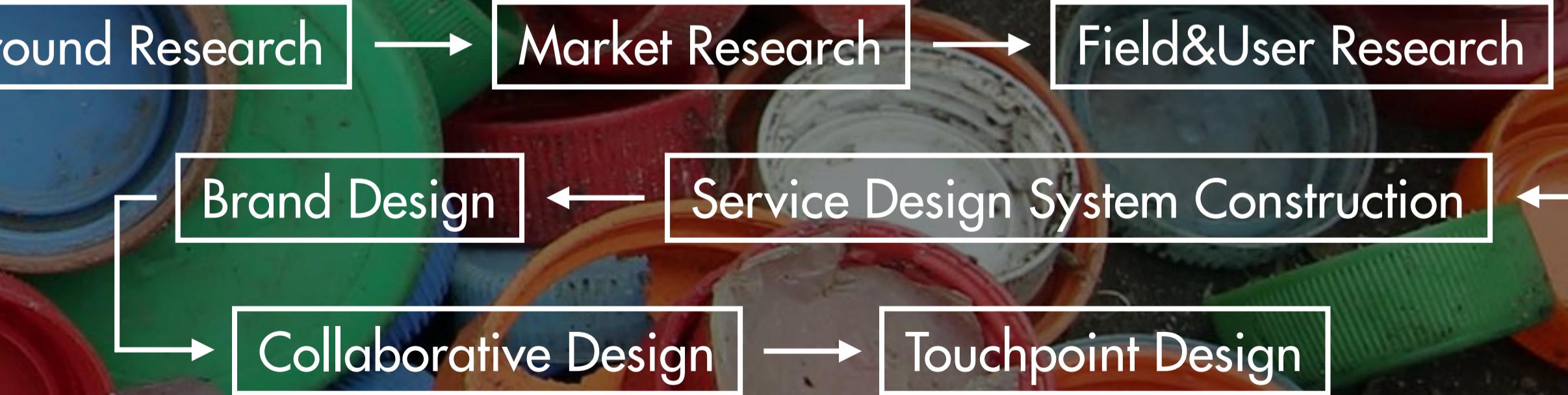
## 01 SERVICE DESIGN

### Team Work

User Research, Service Design, Business Analysis,  
Product Design&Prototype, UI Design

2020.03–2020.06

### Research Route



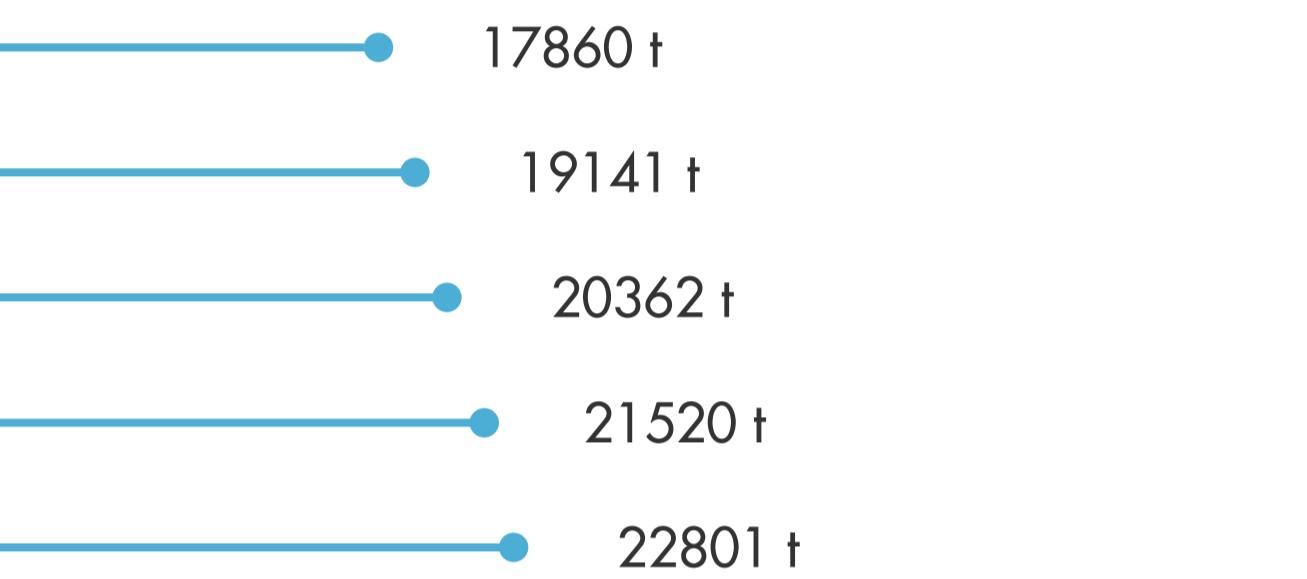
# BACKGROUND

04  
21

In recent years, China's garbage volume has been increasing. In addition, there is a phenomenon that large amounts of recyclable garbage have not been effectively used and environmental pollution has been caused due to the untreated discharge of harmful garbage. Although the Chinese government has issued a number of policies on garbage classification, the garbage classification rules still need to sink and popularize among ordinary people.

## Overall Social Atmosphere

### Domestic Garbage Removal Volume



This chart is about China's domestic garbage removal volume in the past four years. The quantity is increasing.

### Status of Waste Classification in Most Regions

- ▶ High waste production
- ▶ Inconsistent classification criteria
- ▶ Weak execution of residents
- ▶ Single form of education

### Disadvantages of Unsorted or Roughly Classified Garbage

- Encroach on earth space
- Pollute environment
- Spread the disease
- Pollute the atmosphere
- Pollute soil and water

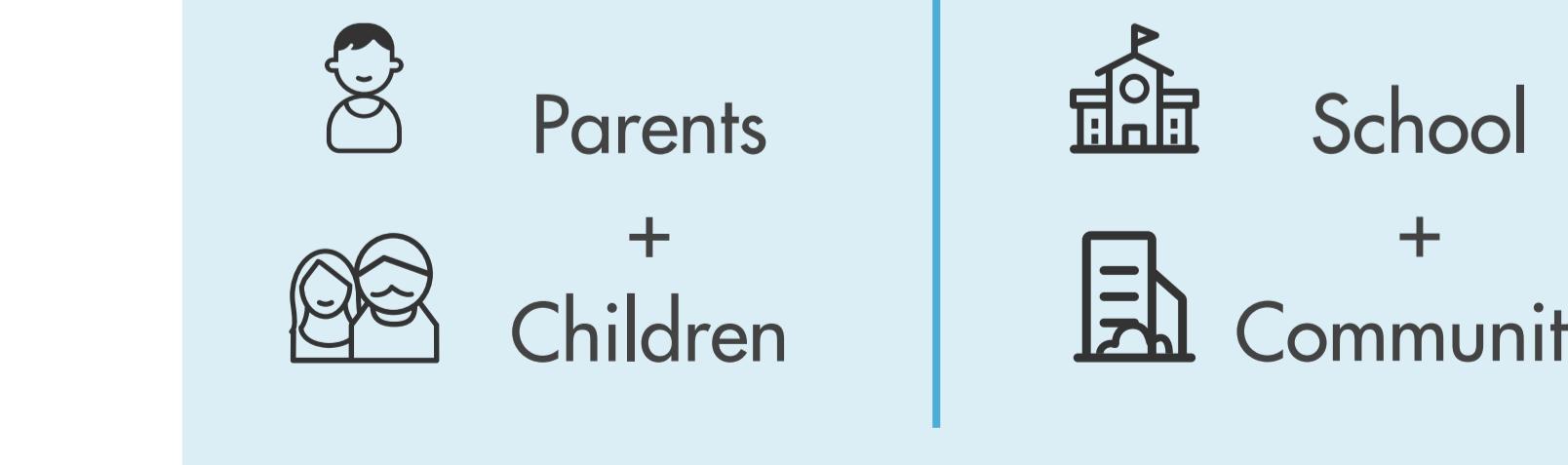
If large-scale unsorted garbage is disposed of by incineration, the use value of a large amount of renewable resources will be lost or tens of millions of dollars will be saved. And the disposal of large-scale unsorted garbage in a landfill will occupy the earth's space, pollute the water and soil environment and even spread diseases

# MARKET RESEARCH

### Existing Methods

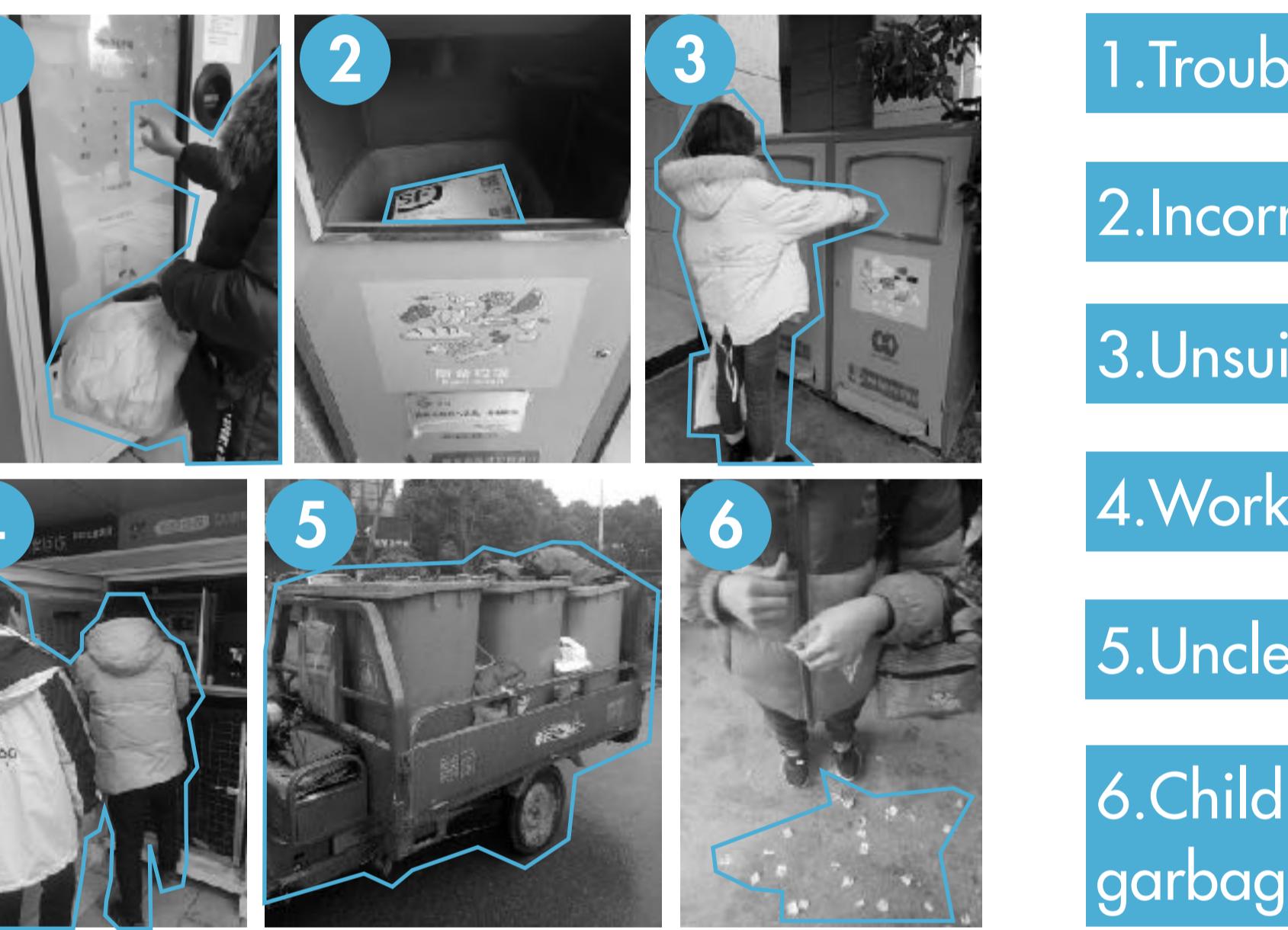


### Consideration



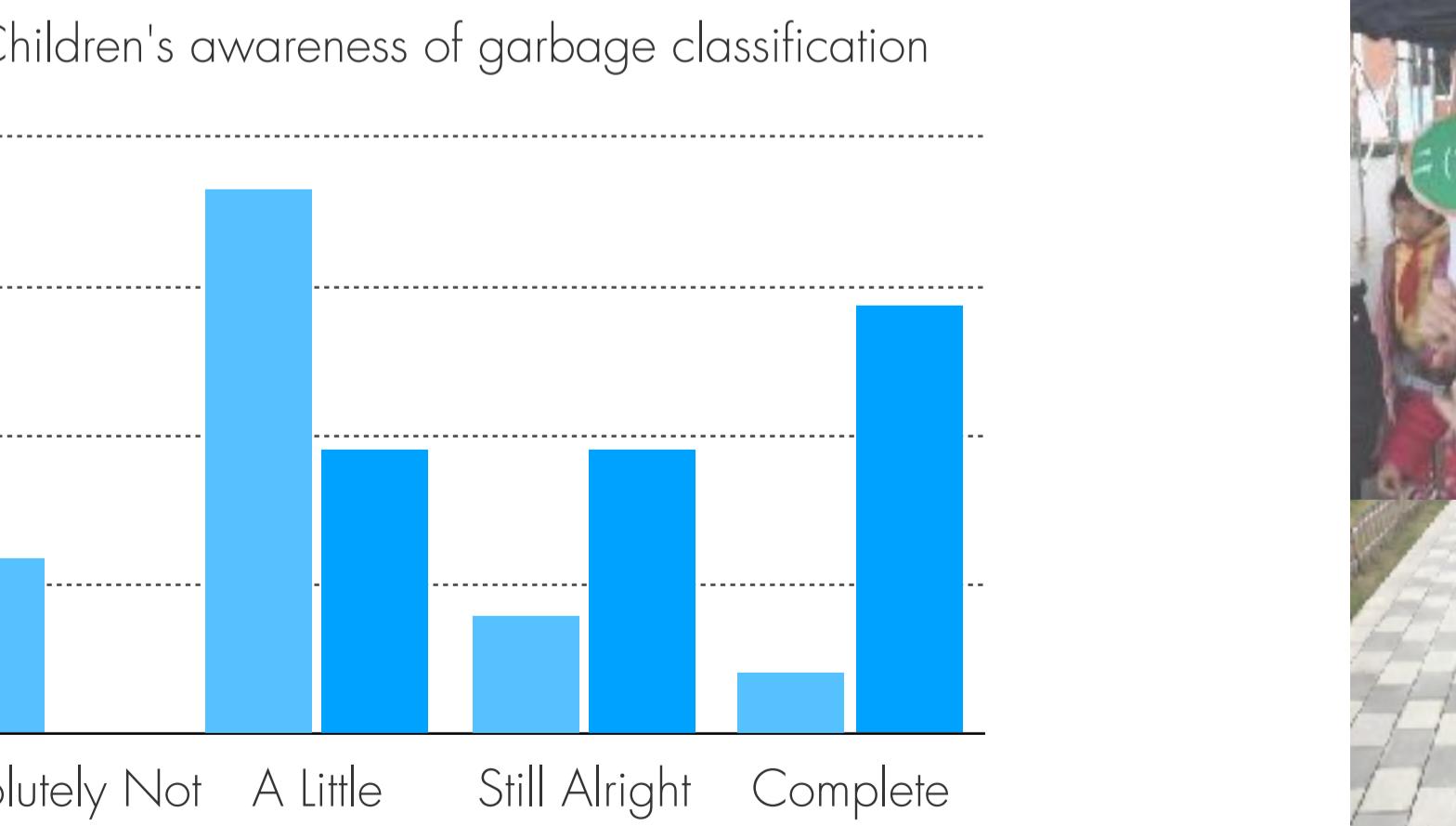
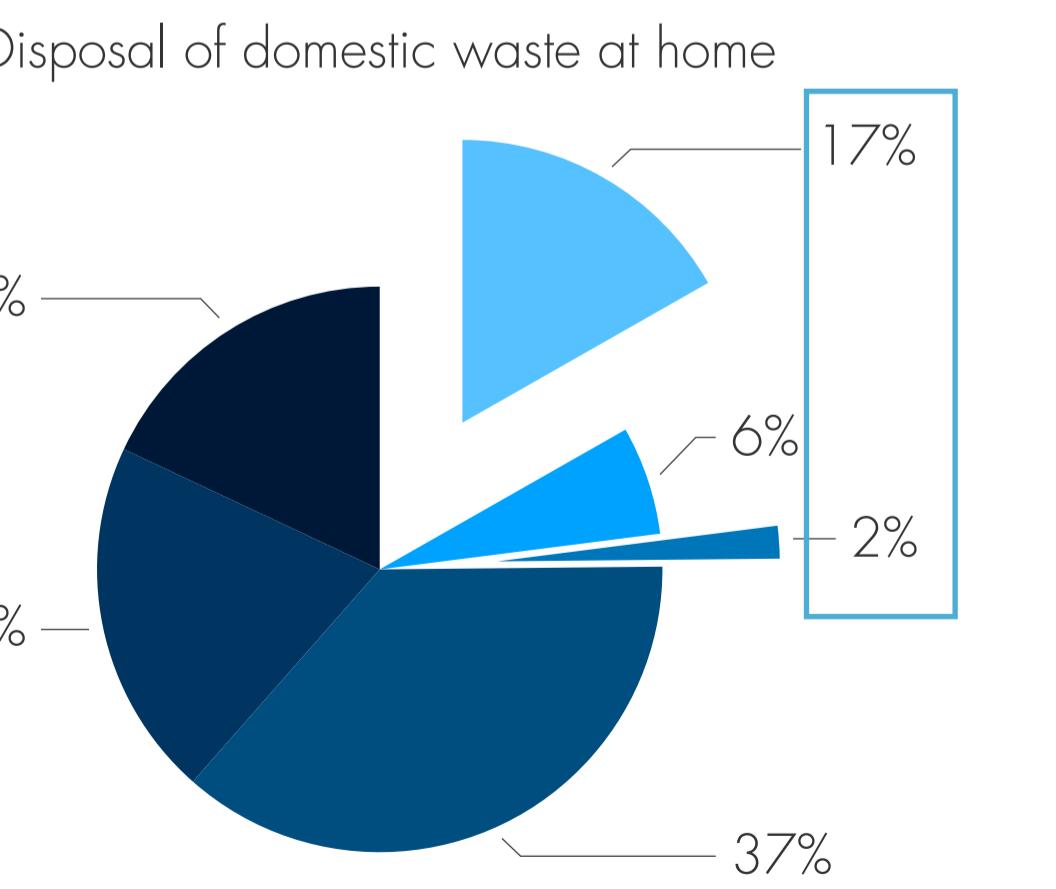
# FIELD RESEARCH & USER RESEARCH

## Existing Issues



1. Troublesome operation process
2. Incorrect garbage classification
3. Unsuitable ergonomics
4. Workers need to sort garbage again
5. Unclear garbage removal process
6. Children have no awareness of garbage separation

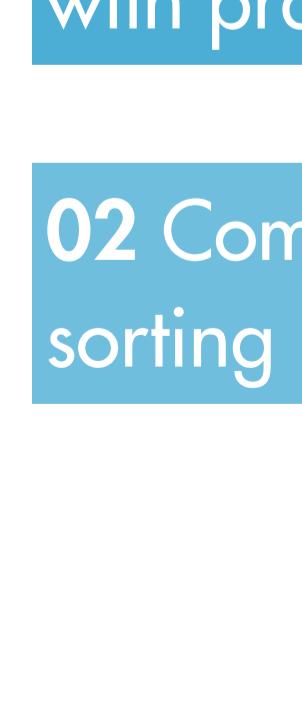
## Questionnaire Analysis



Further comparison of households with complete garbage classification and no classification

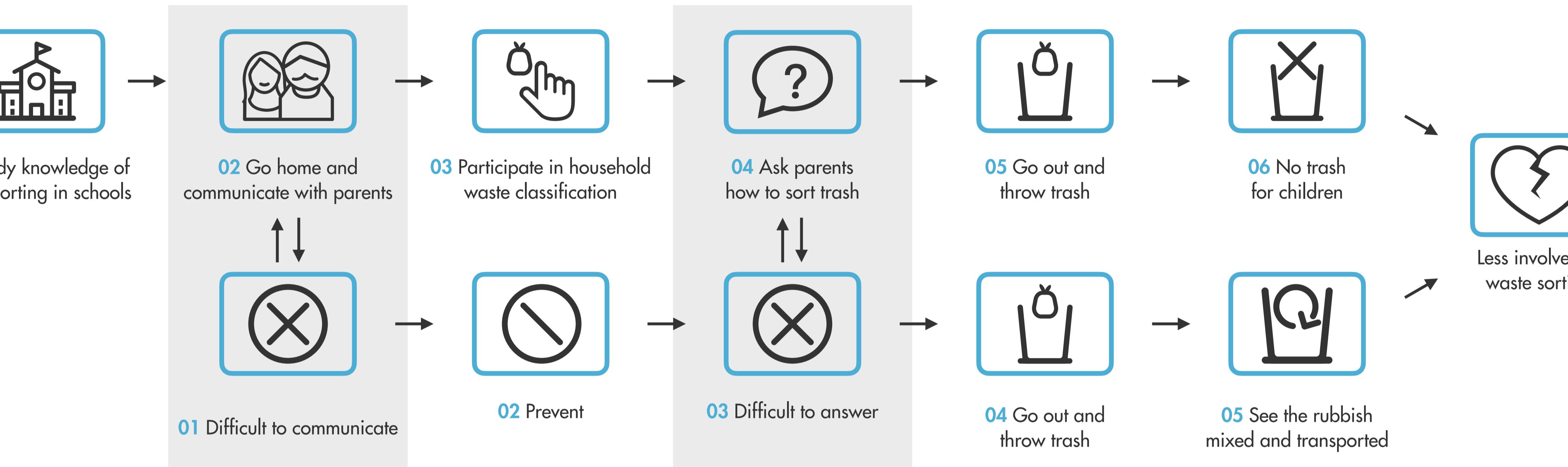


## User Interview



# USER JOURNEY MAP

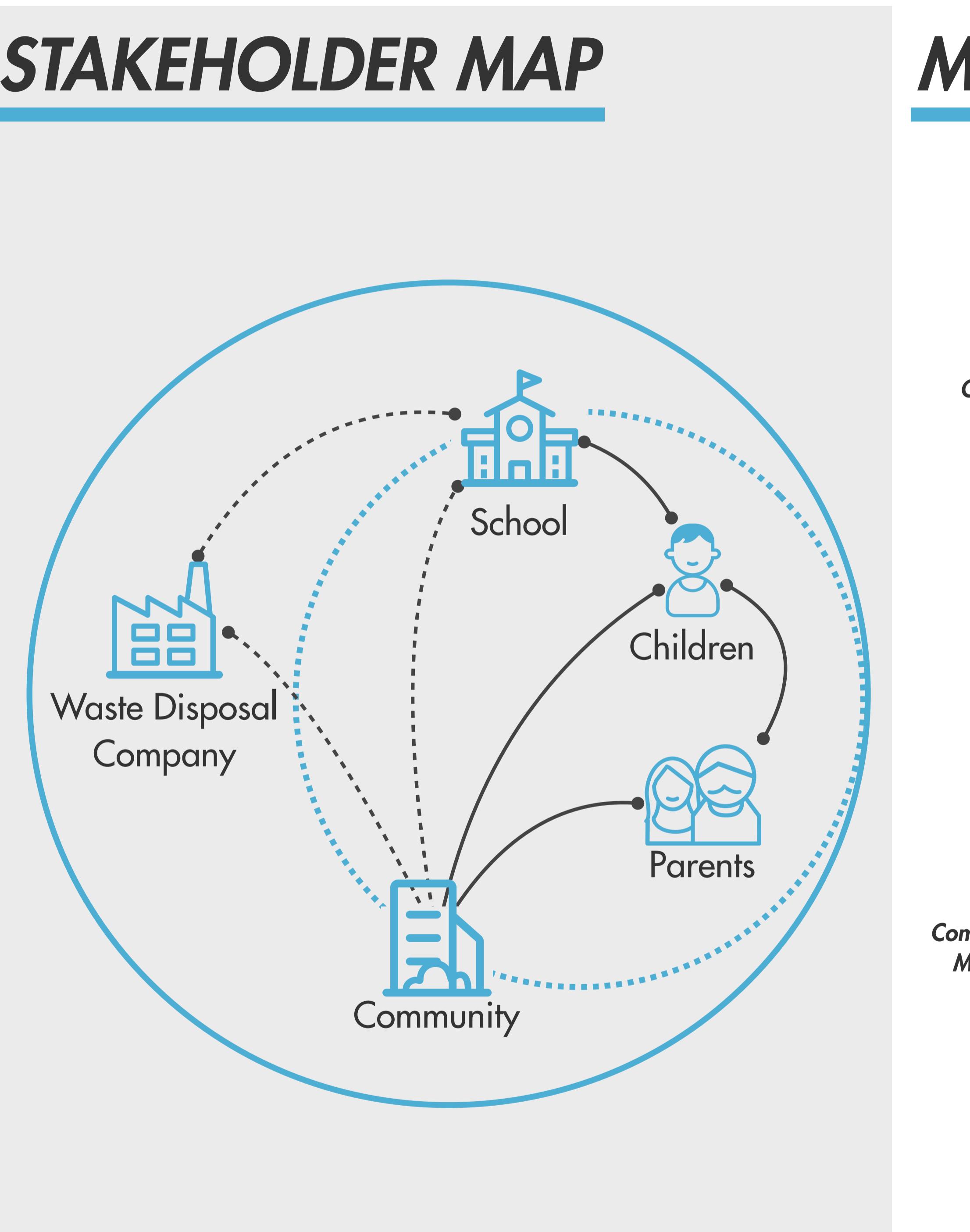
## User Flow



## Pain Points

- 01 Children cannot effectively combine written knowledge with practical practice.
- 02 Community infrastructure is not perfect for waste sorting

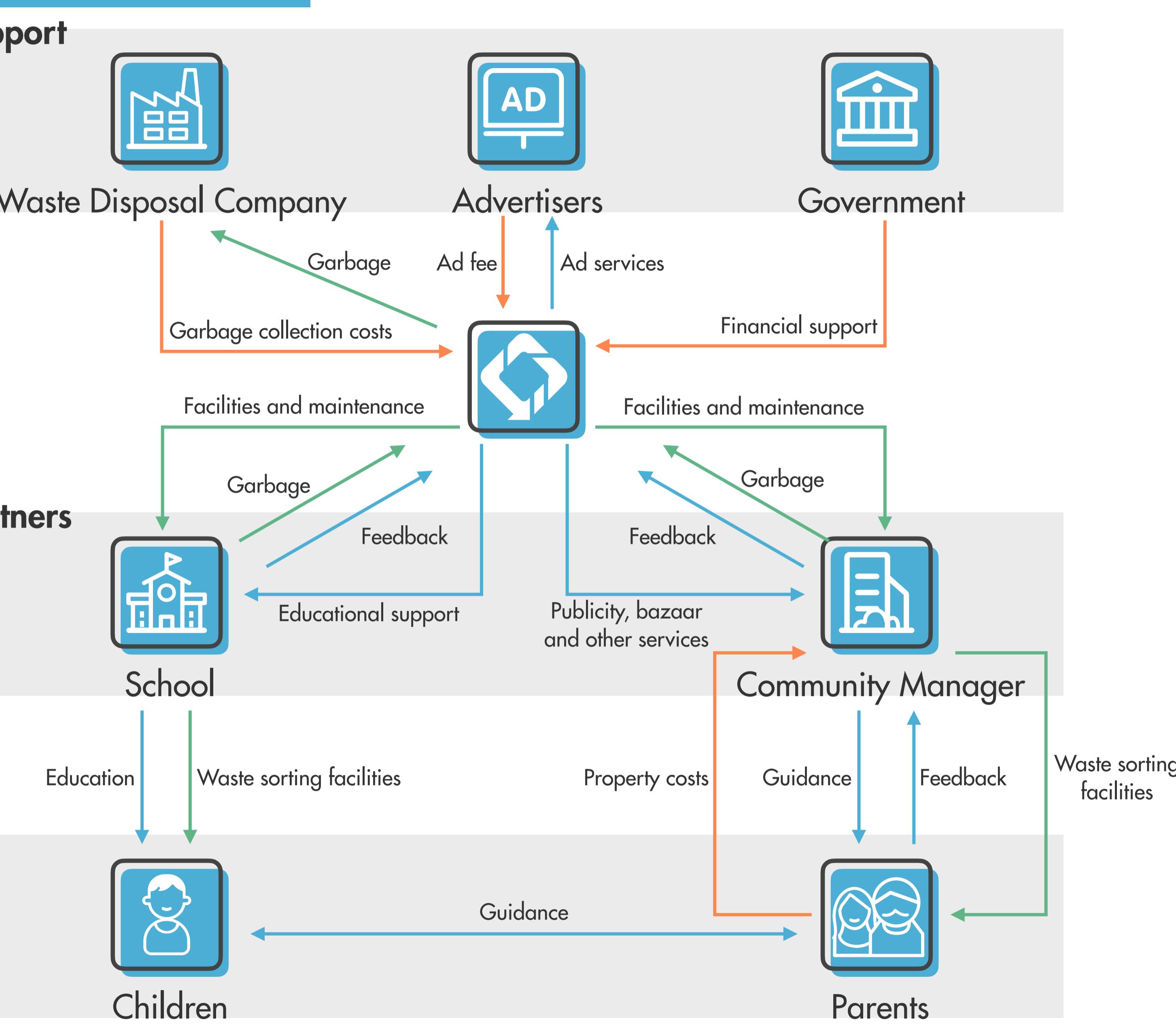
- 03 Parents can't educate their children well on garbage classification and provide accurate knowledge
- 04 The back-end processing is not standardized and opaque in the garbage classification



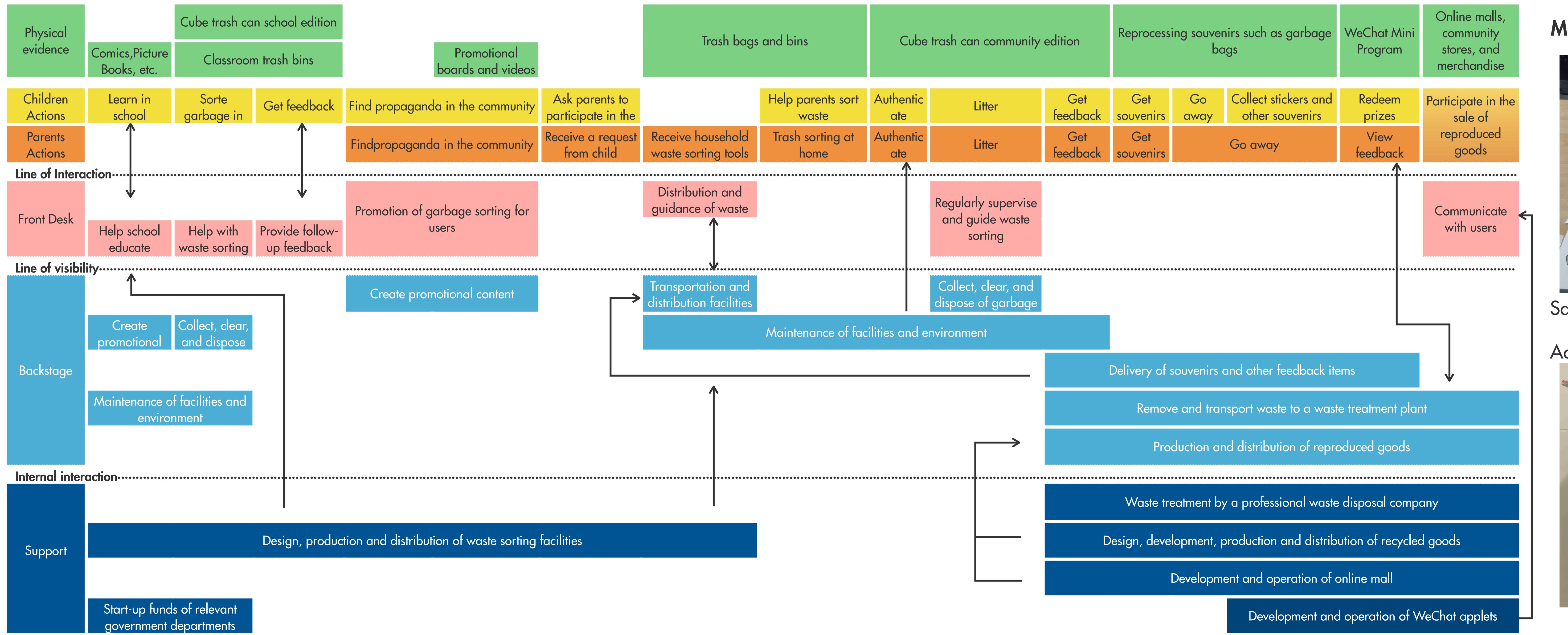
## MOTIVATION MATRIX

	Children	Parents	School	Community Manager	Cube
Children	Fun experience Easy to use Satisfaction	Actively involved in housework Get in the habit of separating waste	Active participation Study hard Obey the rules	Active participation and cooperation Obey the rules	Participation and coordination Obey the rules Provide user feedback
Parents	Exemplary role Participation in waste sorting Affirmation and praise	Dispose of waste quickly and easily Cultivate children's environmental awareness and responsibility	Home education to complement school education Exemplary role for children Support for school	Participation and coordination Obey the rules Education and supervision of children	Cooperation and participation Obey the rules Provide user feedback Education and supervision of children
School	More comprehensive education combined with practice Rich environmental protection activities	Comprehensive education for children Feedback and supervision of children's behavior	Provide better education Create a better environment Reduce cleaning costs	More professional and effective education for children	Education and activities for children Product use feedback
Community Manager	Safe and convenient environment Good community atmosphere Community education and activities	Safe and convenient facilities Good community service	Co-promotion for children Community education Provide event environment	Enhance brand value Lower cleaning costs A better living environment	Communication with residents Cooperation with related activities Provide feedback
Cube	Fun experience Ergonomic, easy-to-use device	High-quality waste sorting facilities More professional education Follow-up feedback	Safe facilities Professional education Regular maintenance of the facility and follow-up feedback	Provide follow-up services Educational activities Small footprint and easy to maintain facility	Better brand value Raise awareness of waste sorting

## SYSTEM MAP



# SERVICE BLUEPRINT

07  
21

# COLLABORATIVE DESIGN

## Material Preparation



Sand Table Model

## Field Record



Actionable Mini Model



## BRAND DESIGN

### Primary Logo



### Sub Brands

08  
21

### Color Pallete

Blue  
R 103/G 172/B 209  
#67ACD1  
PANTONE 638C

Green  
R 144/G 206/B 138  
#90CE8A  
PANTONE 7479C

Yellow  
R 239/G 225/B 94  
#FFE5E  
PANTONE 107C

Orange  
R 225/G 148/B 79  
#E1944F  
PANTONE 1495C

### Brand Concept

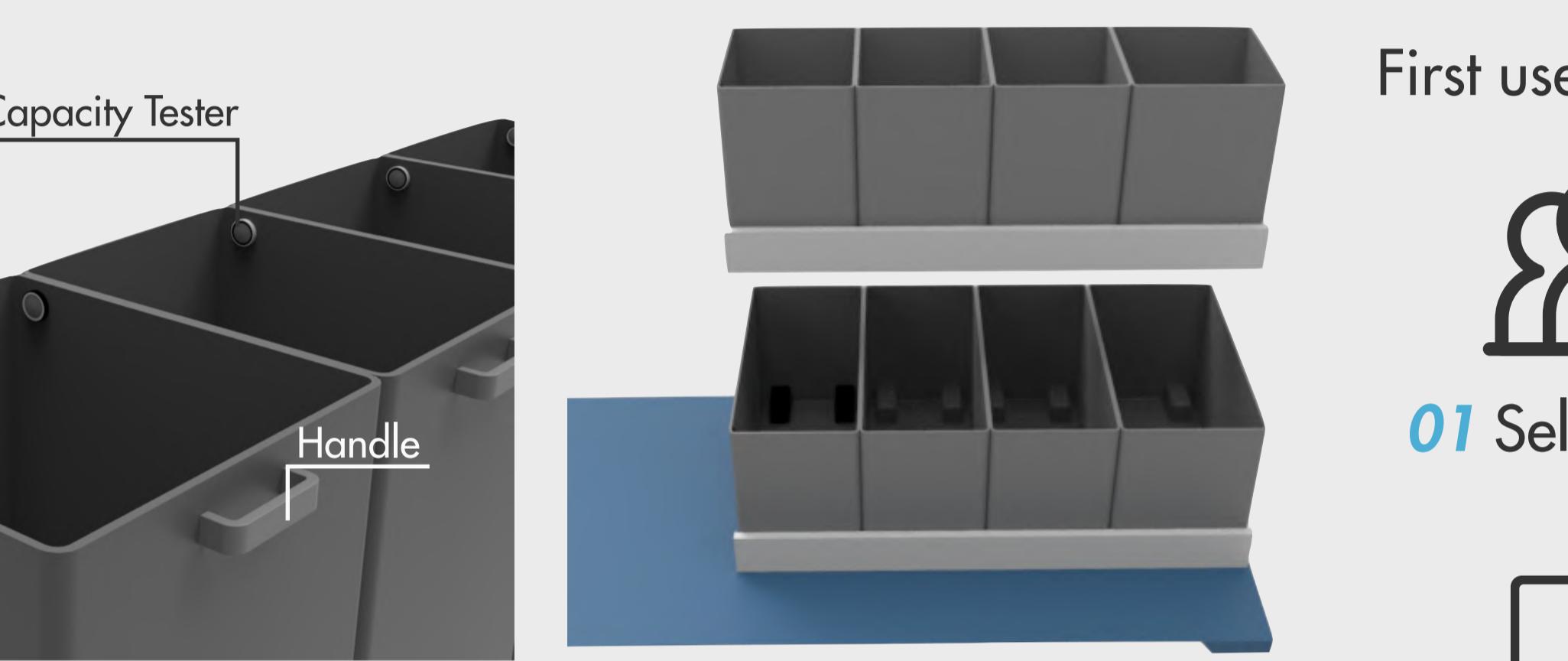
13  
Educate A Child  
Affect A Family  
Beautify A Community

### Contextual Examples

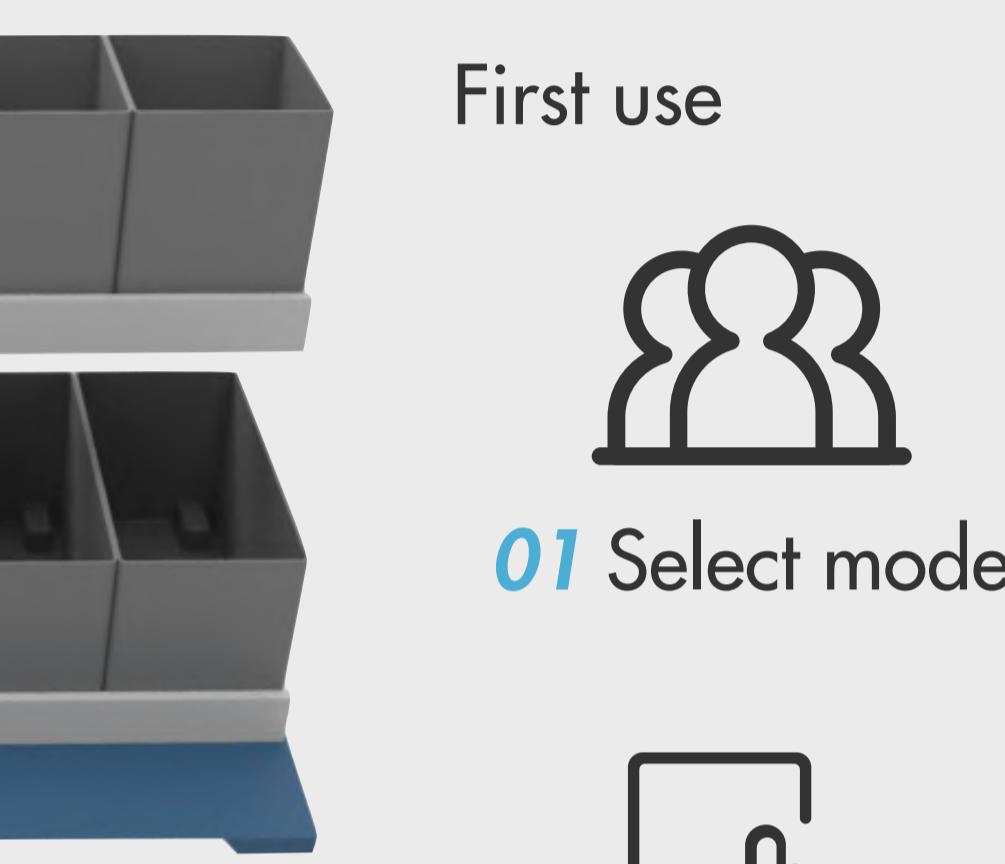


## TOUCHPOINT DESIGN

### Internal Structure



Internal trash cans



### Detail Design



### Trash Can Interactive Design

#### First use

- 01 Select mode
- 02 Face recognition
- 03 Enter ID number
- 04 Select type
- 05 Litter
- 06 Finish

#### Daily use

- 01 Face recognition
- 02 Select type
- 03 Litter
- 04 Finish



# TOUCHPOINT DESIGN

## Household Tools

09  
21

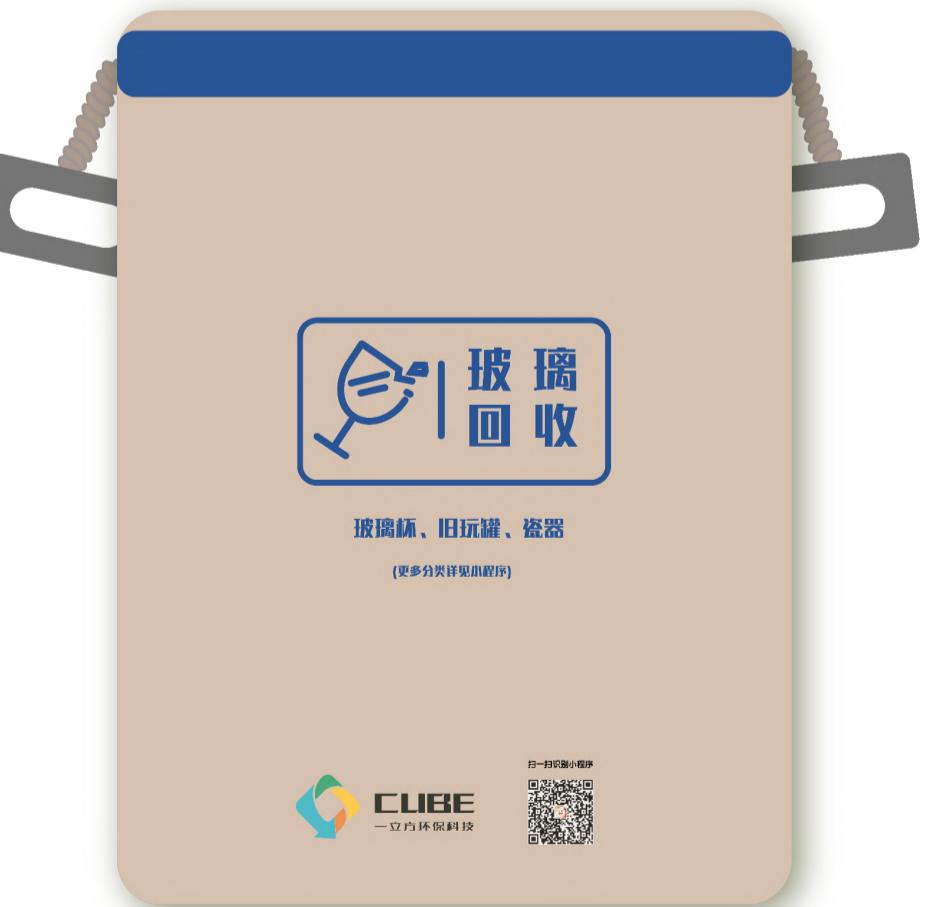
Food recycling bags



Textile recycling bags



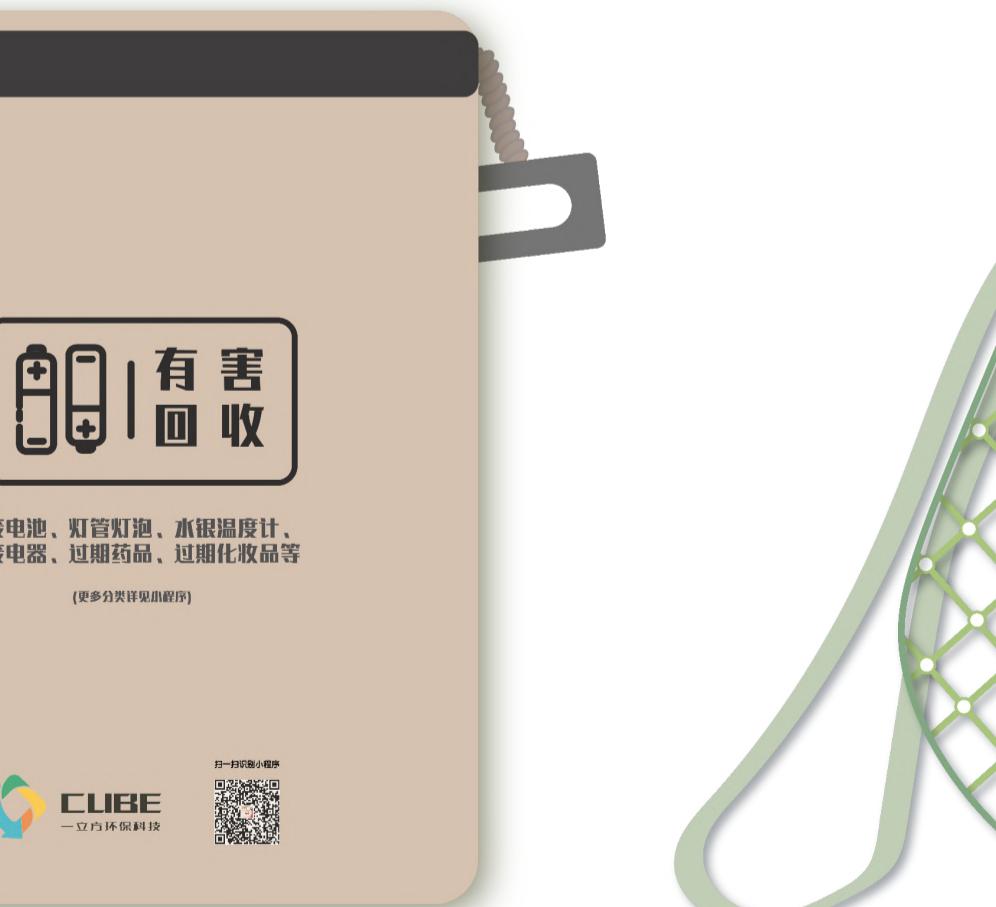
Other recycling bags



Glass recycling bags



Metal recycling bags



Hazardous garbage bags



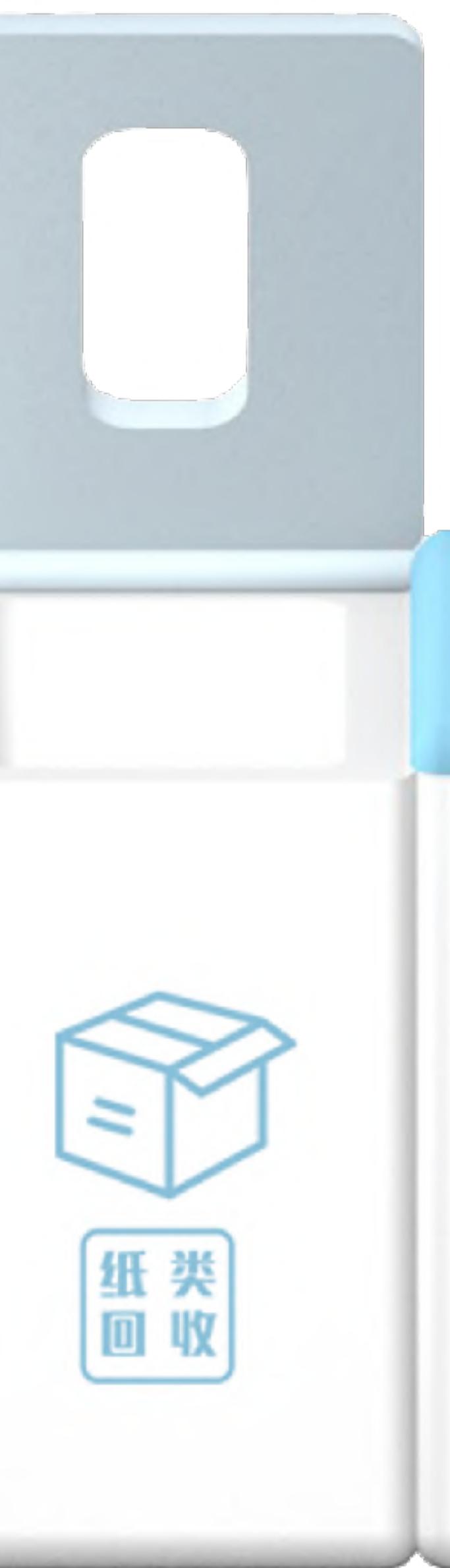
Bottle recycling bag



Plastic recycling bag



## Classroom Waste Recycling Tools



## Wechat Mini Program Design



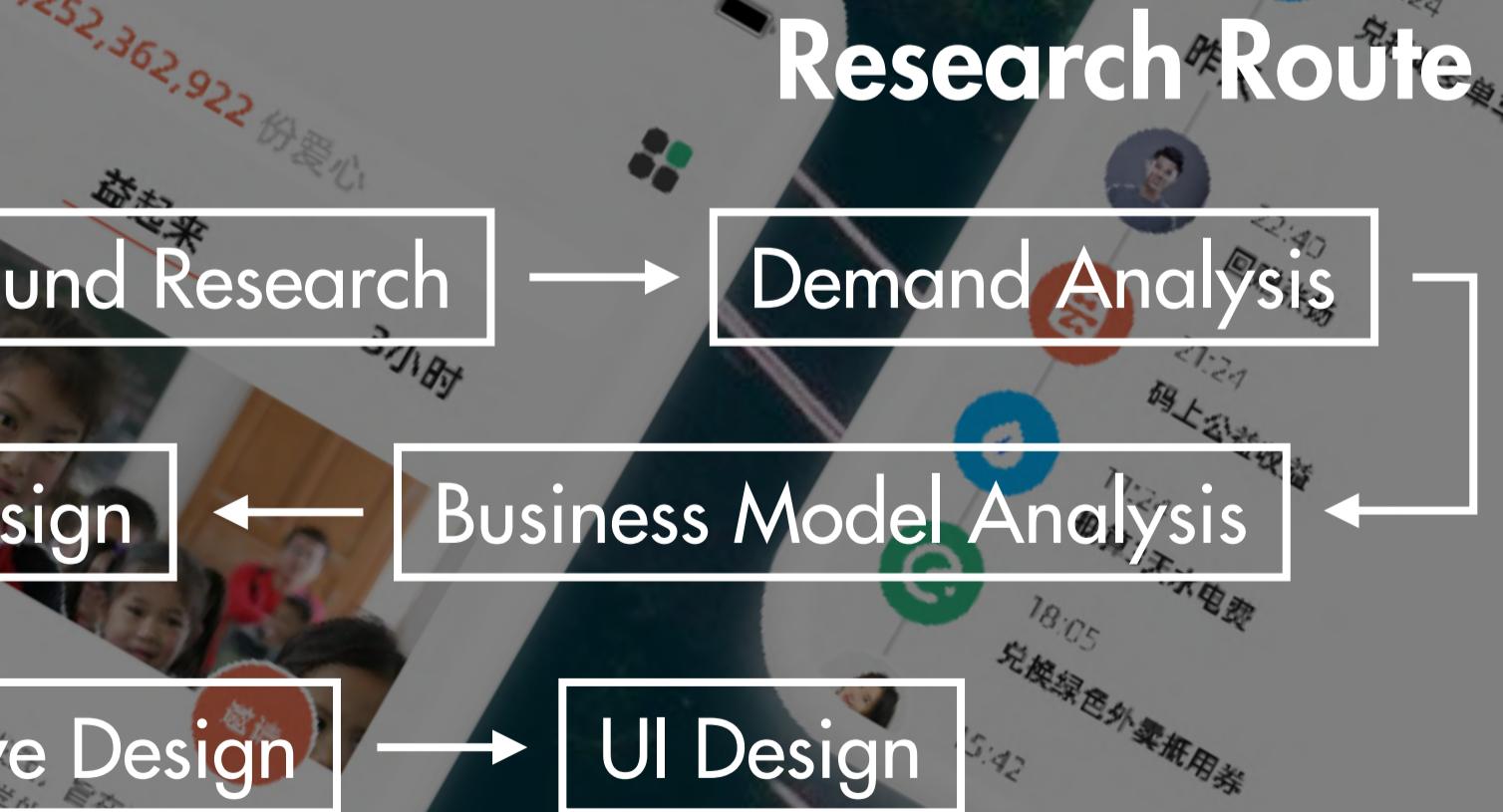
# Qingyi - Business resource + User value + Social responsibility=?

## 02 INTERACTIVE DESIGN

### Team Work

Concept, Demand Analysis,  
Interaction Design

2020.11-2020.12



## BACKGROUND

11

21



Ant Qingyi is based on the current carbon account in Alipay's three major account systems, integrating the existing three functional sections of Ant Forest, Ant Manor and Alipay, and joining the strange social soft mode under the environmental protection public welfare. I hope that while improving the Alipay carbon account and public interest participation, we will provide a new Alipay social portal to further enhance the environmental public welfare participation and build a harmonious society.

## DEMAND ANALYSIS

### External Demand



#### User Pains



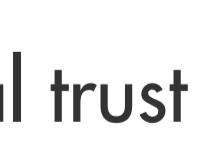
Lack of time and energy



Lack of material reward



No friends to do charity together



Social trust crisis



#### Solution

Online public service platform

Refine carbon account quantification and reward model

Integrate public benefit modules

Users build a public welfare community together

Provide a new social mode

### Internal Demand



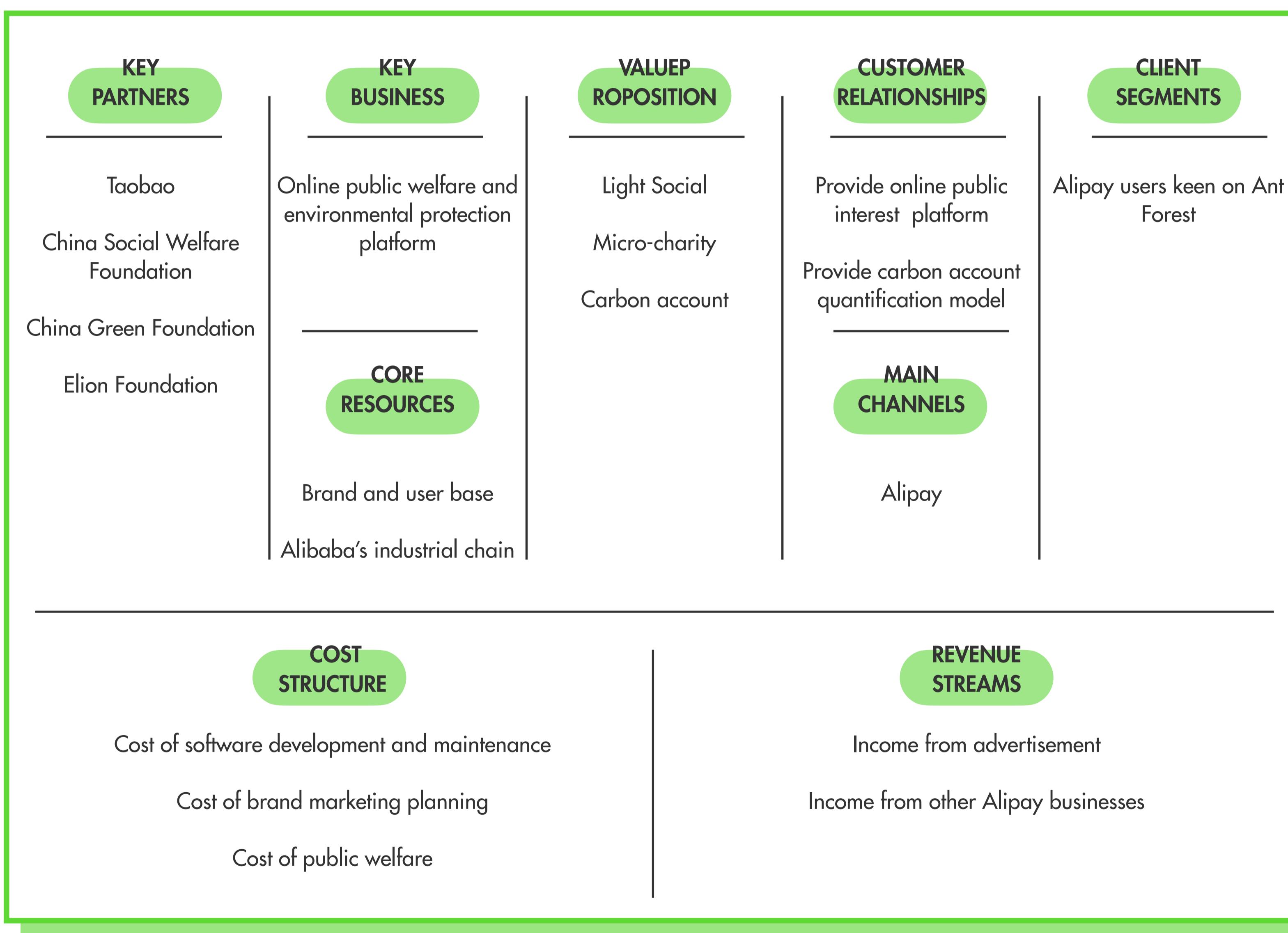
#### Alipay Demand

Missing social scenes, unable to utilize user resources

The "green energy" carbon account model is weak and lack of existence

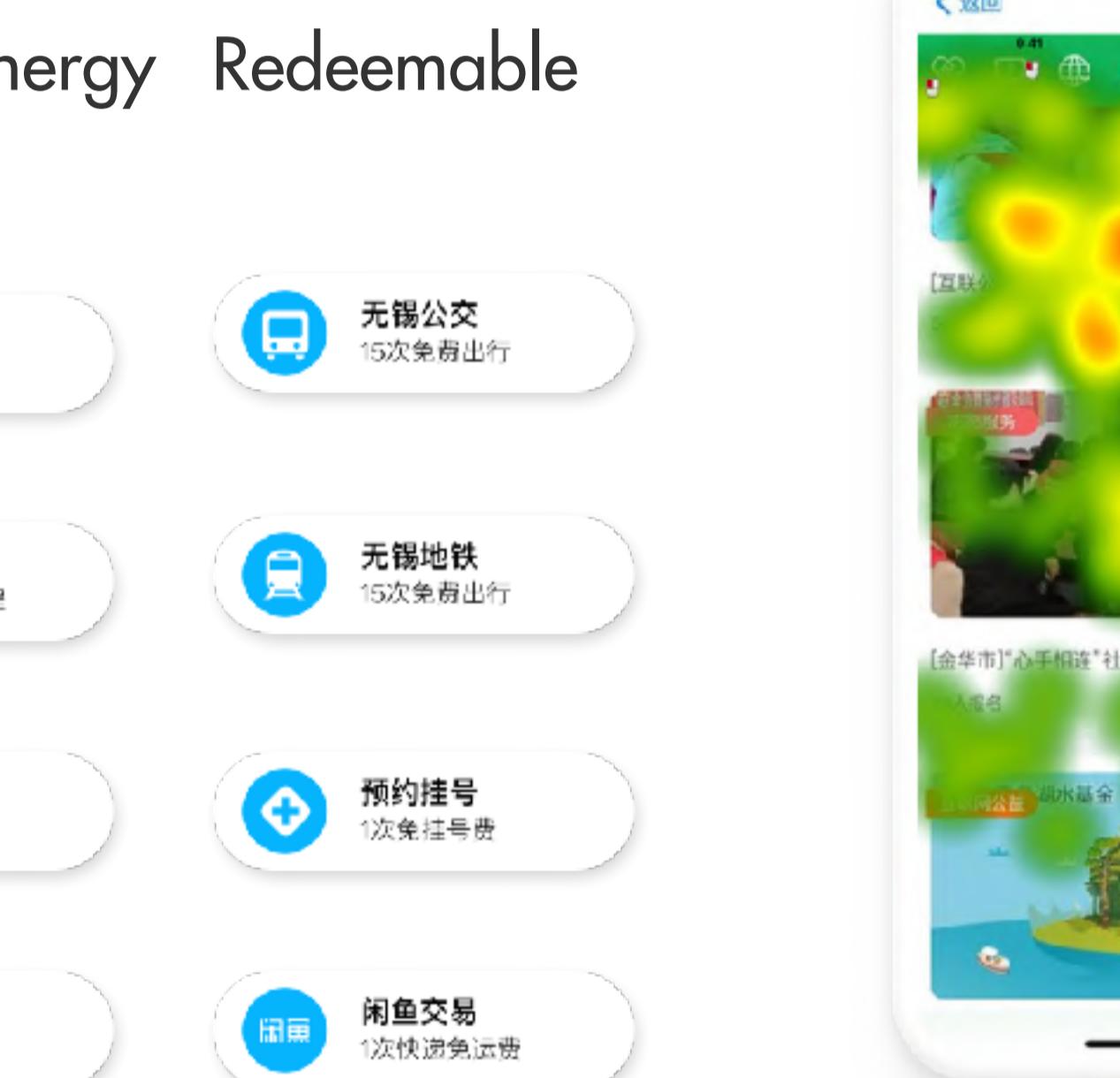
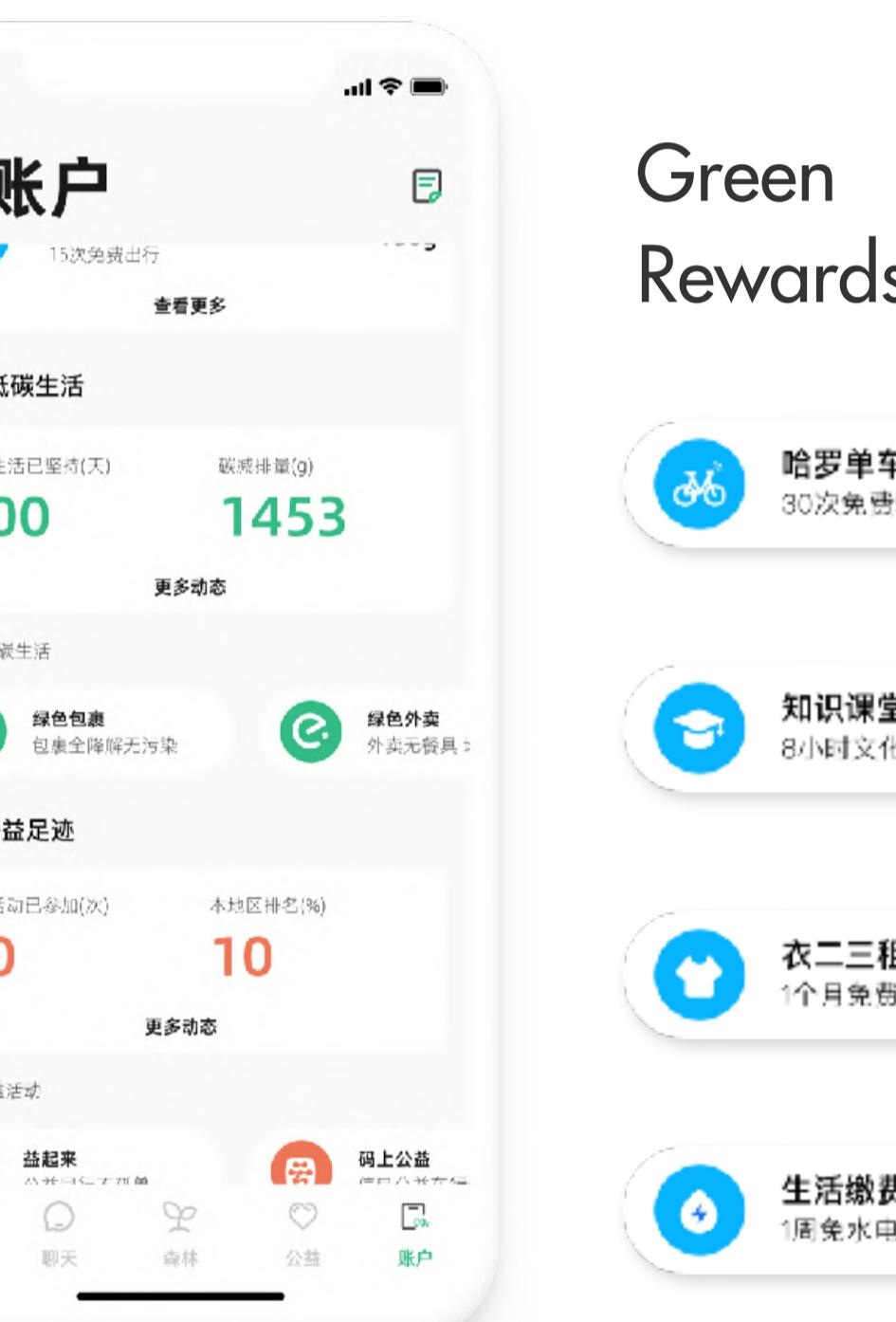
## BUSINESS MODEL

### Business Canvas



# BUSINESS MODEL

## Drainage Module



## Low carbon life around you



## Public welfare activities around



# INTERACTIVE DESIGN

## Initial Edition



## The First Edition



## The Second Edition



Based on t-test and data comparison, the second version meets the usability goal and can bring a better experience to users.

Set the availability goals based on the original version test results as follows:

- 1 Time to first fixation is less than 250ms
- 2 Reaction time is less than 15s.
- 3 Correct rate is greater than 90%.

## time to first fixation

Area	Number of Participant	Average/s	Standard Deviation
AOI_1	16	0.63491	0.27676
AOI_2	16	0.73582	0.37568
AOI_3	16	0.74359	0.35648

## time to first fixation-2

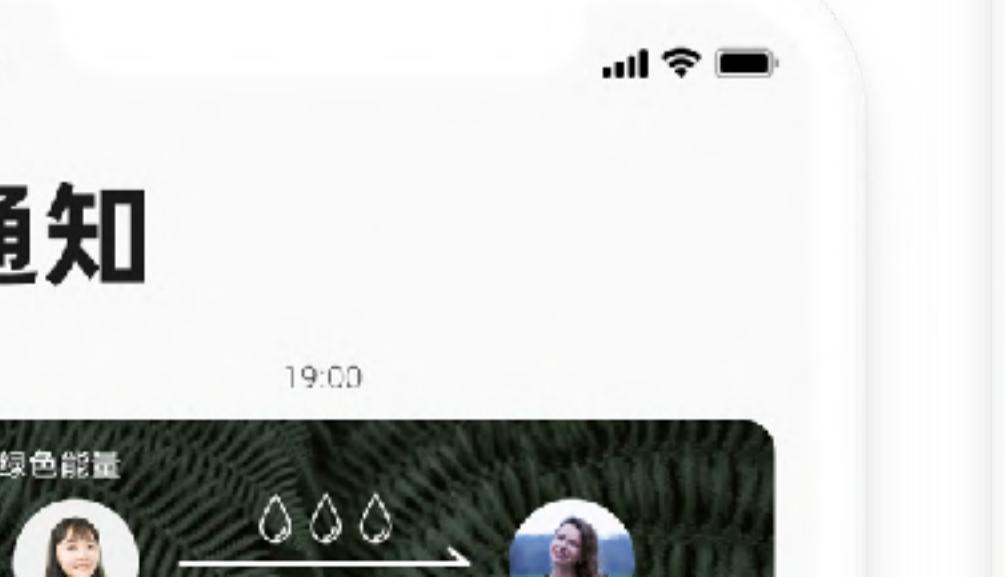
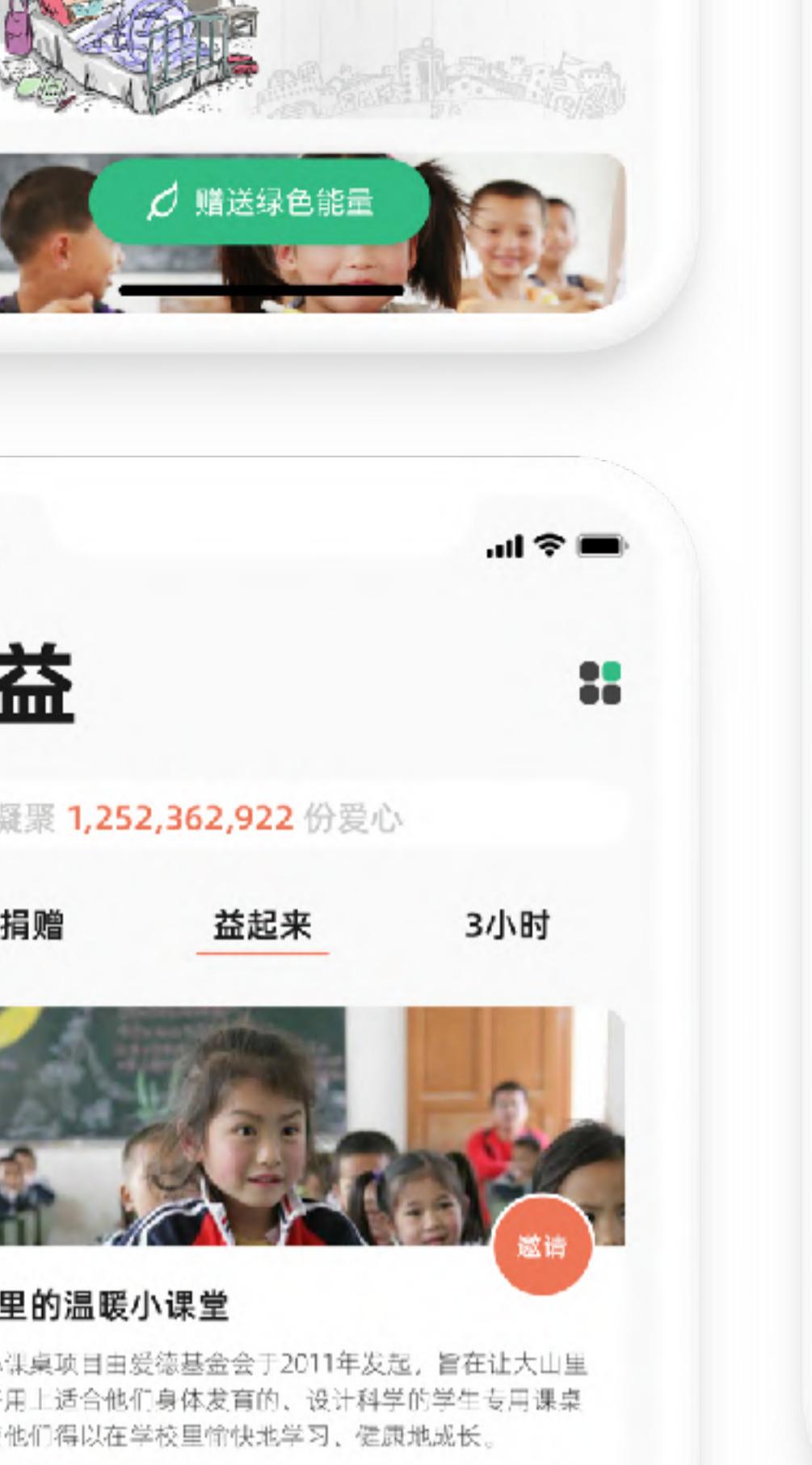
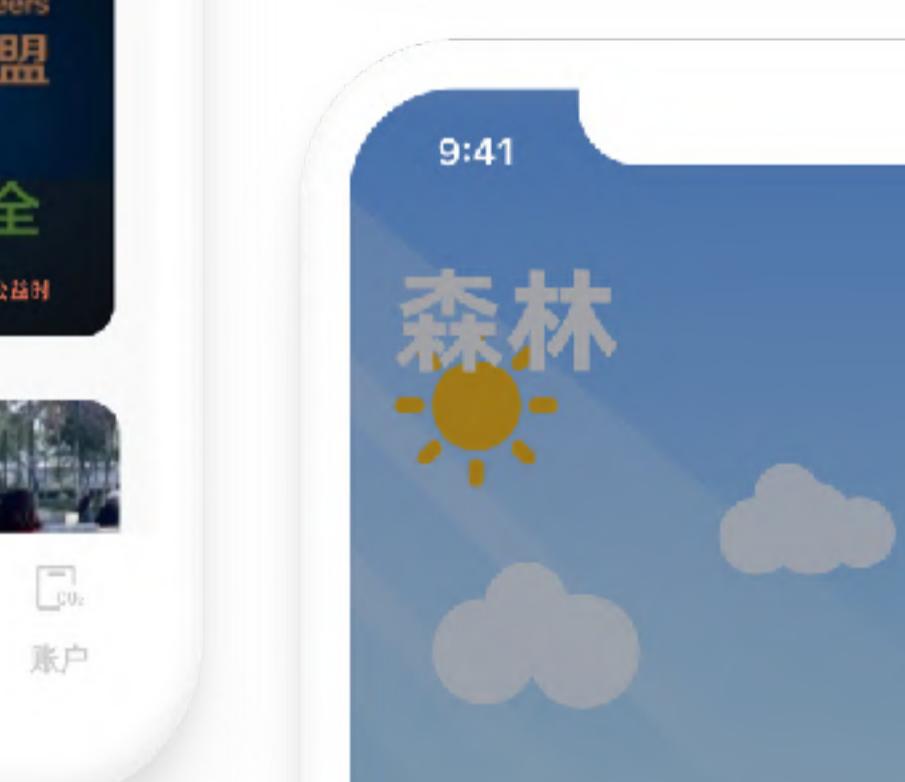
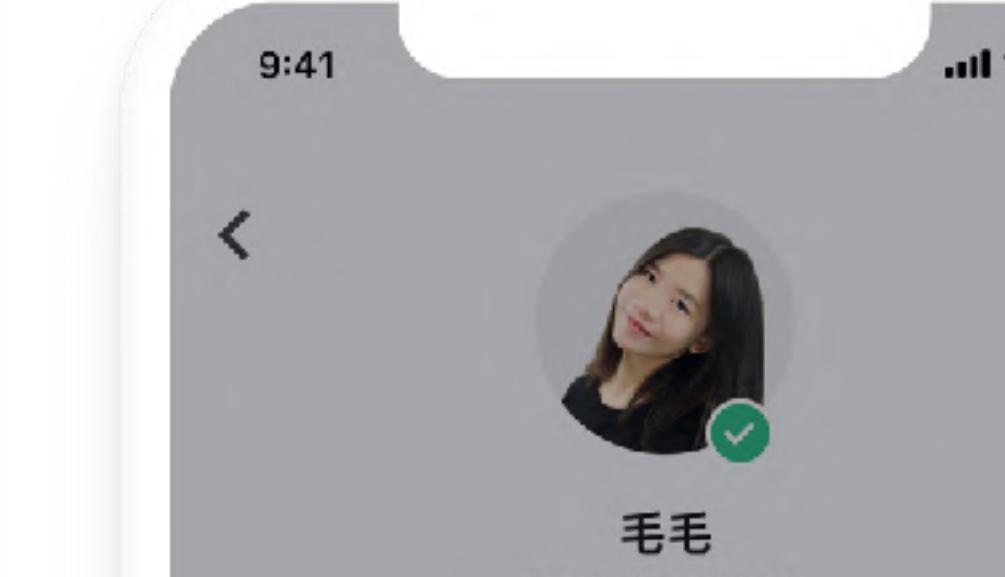
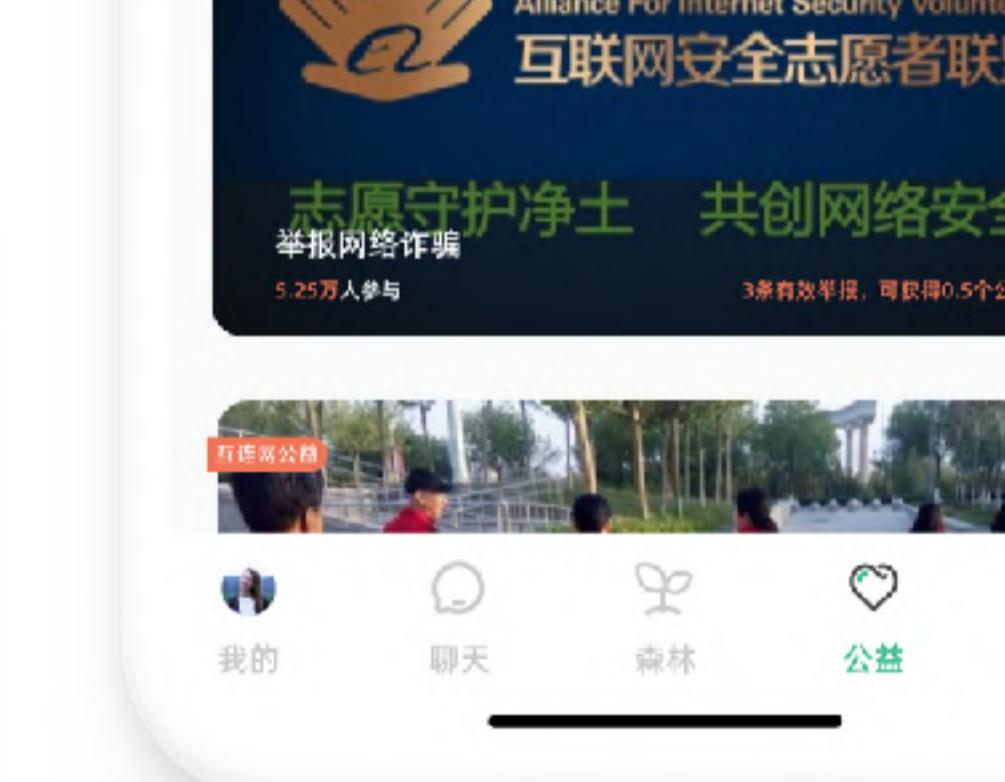
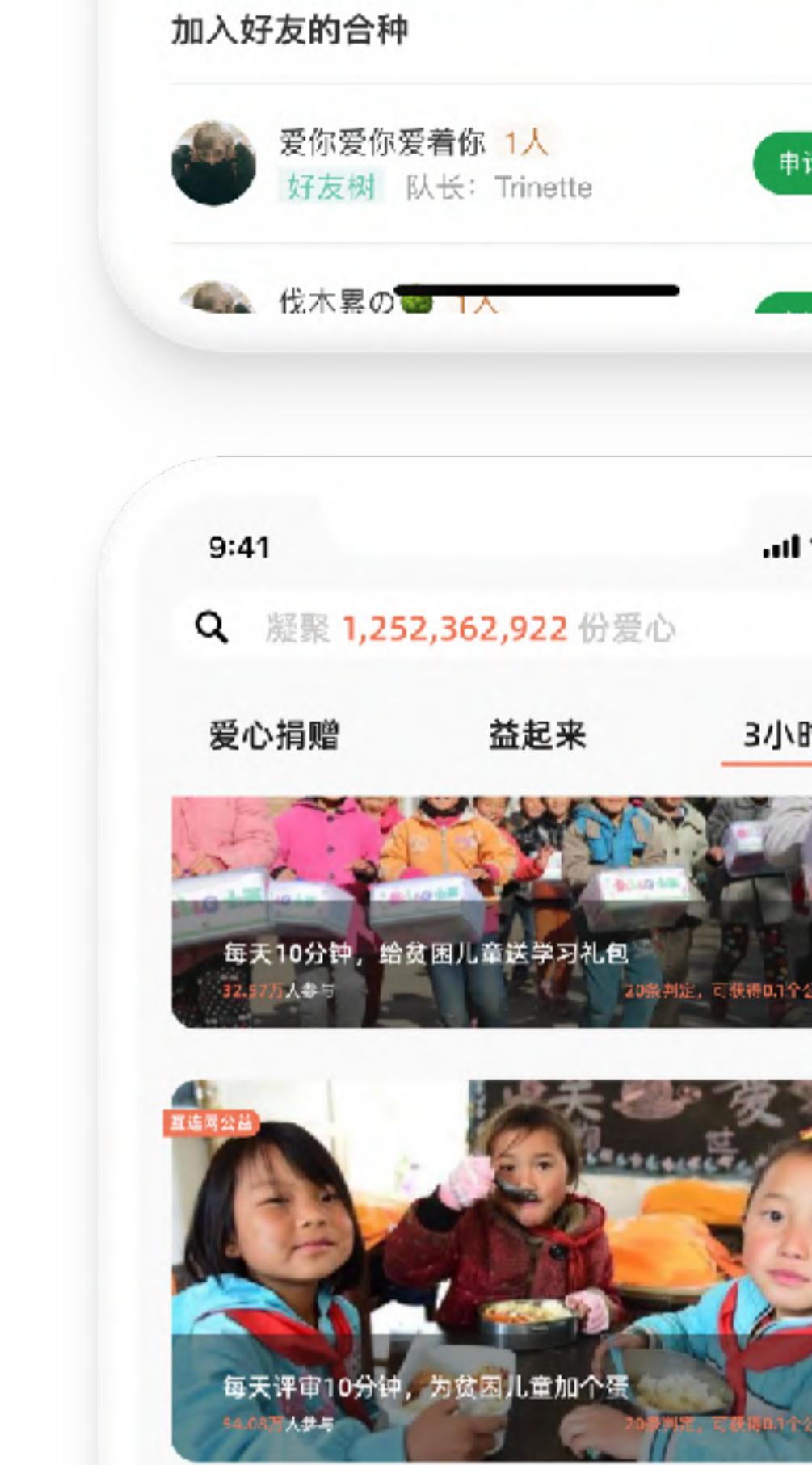
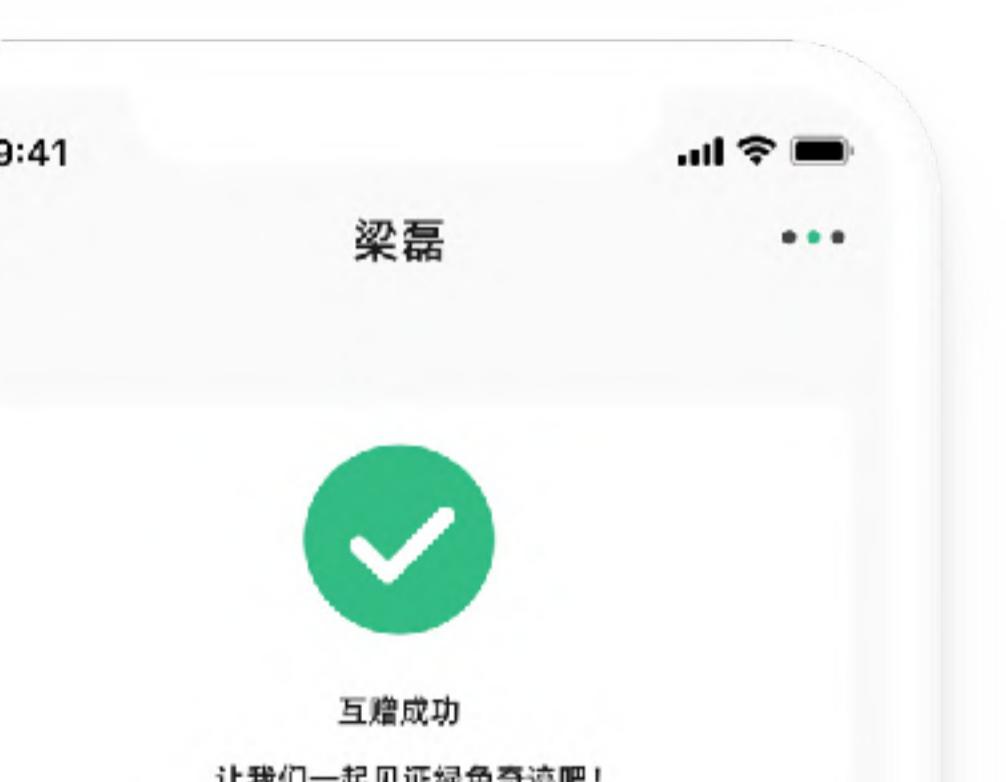
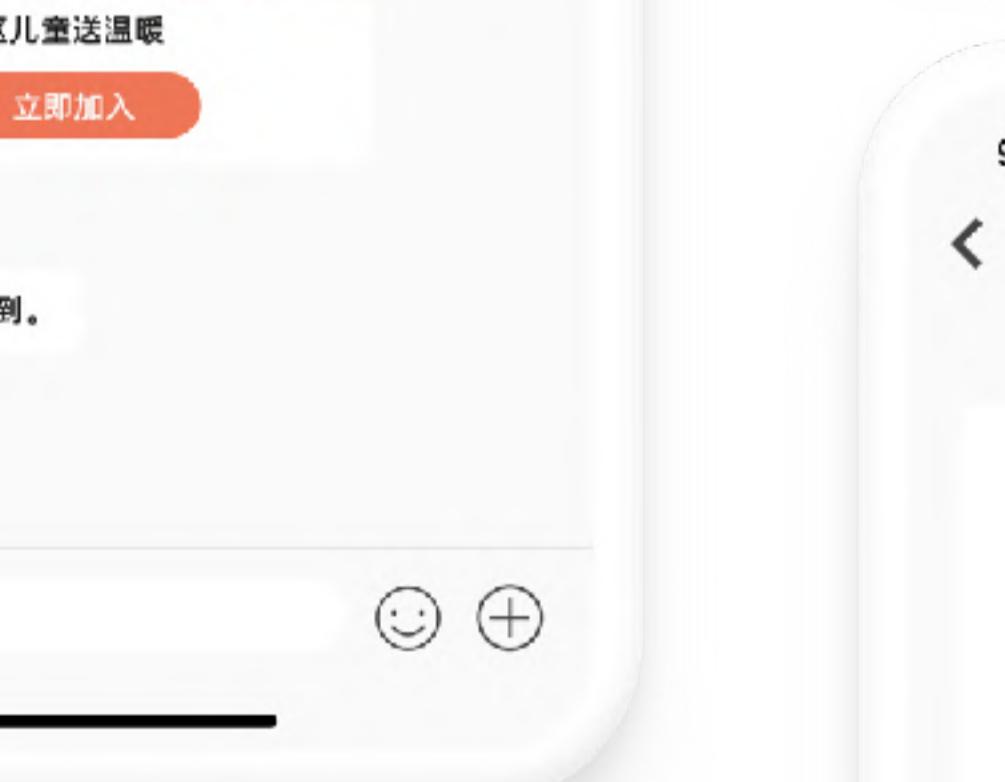
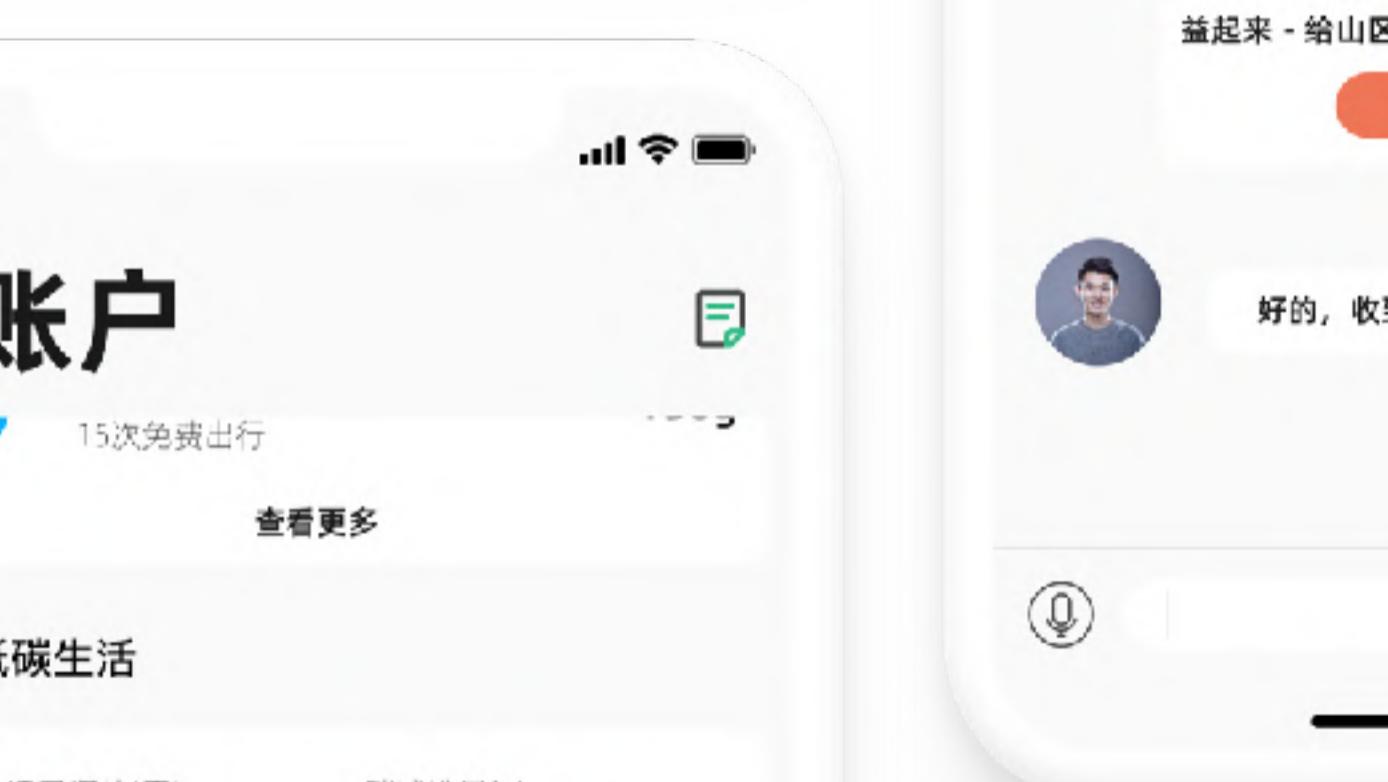
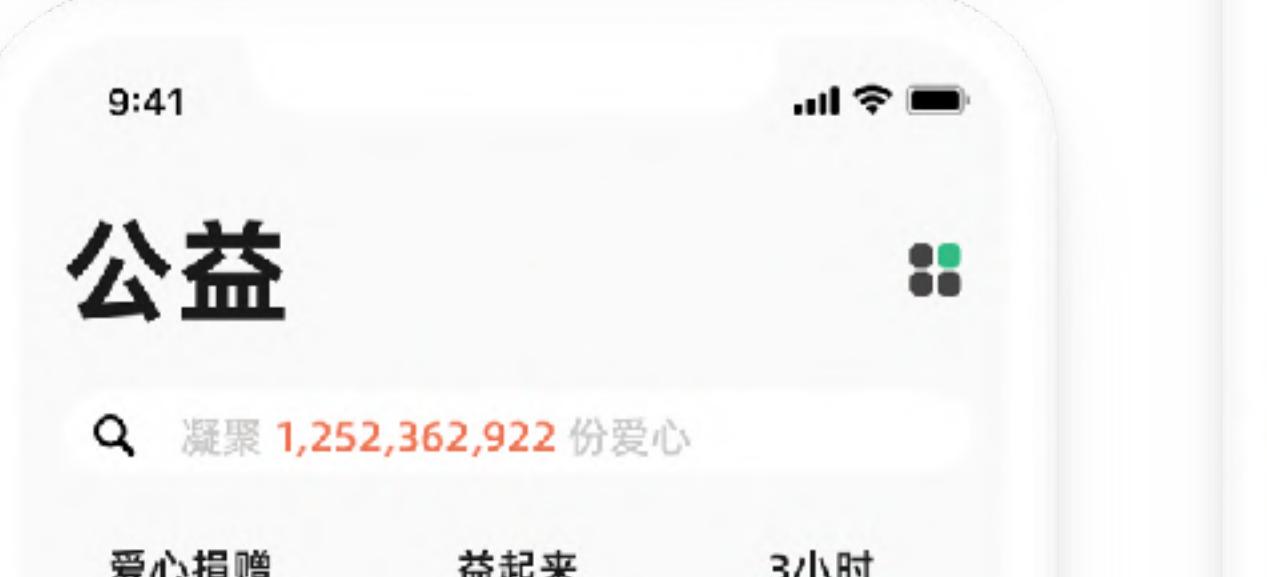
Area	Number of Participant	Average/s	Standard Deviation
AOI_1	16	0.25867	0.10567
AOI_2	16	0.25867	0.16436
AOI_3	16	0.28763	0.12456

## Correct rate & Reaction time

version	Correct rate		Reaction time	
	Average/s	Standard Deviation	Average/s	Standard Deviation
V0.0	100%	0	23.3567	0.7987
V1.0	100%	0	15.7689	0.63678
V2.0	100%	0	13.5678	0.53247

## 02 - Ant Qingyi

### UI DESIGN



# 闹市书苑 - How to create a new reading experience in a noisy city?

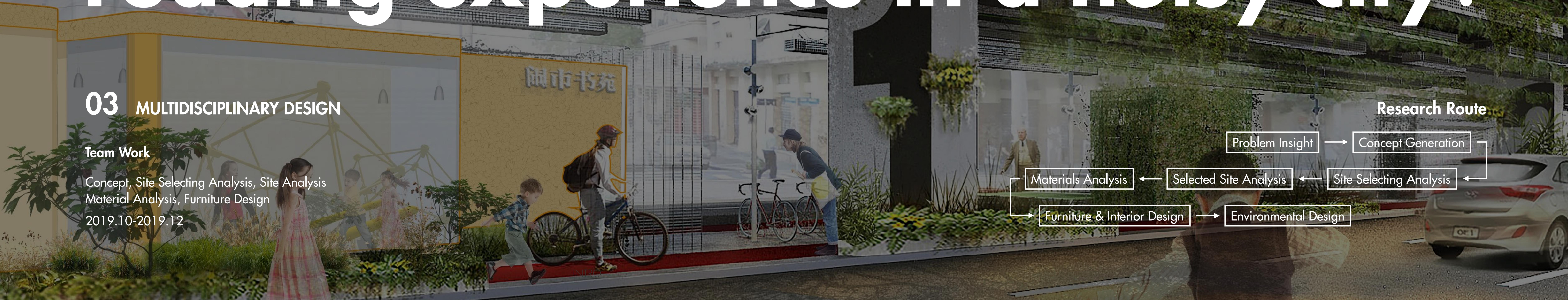
## 03 MULTIDISCIPLINARY DESIGN

### Team Work

Concept, Site Selecting Analysis, Site Analysis

Material Analysis, Furniture Design

2019.10-2019.12

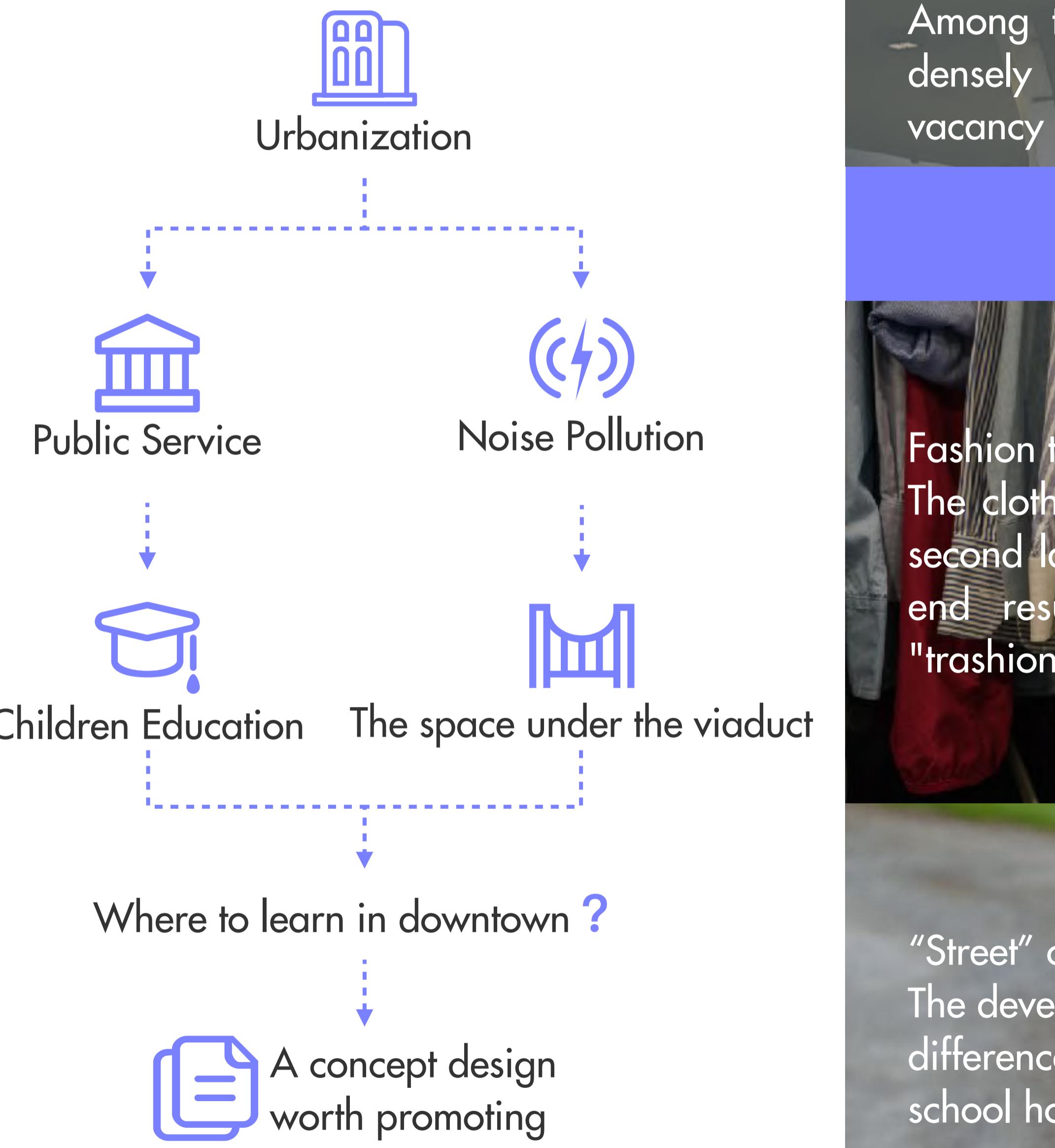


# PROBLEM INSIGHT

## Insight into the Problem

15

21

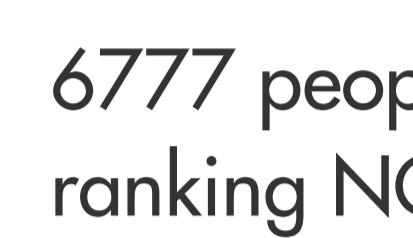


## Problems in the City

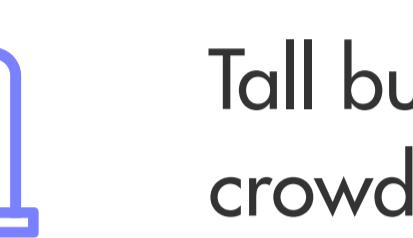


# SITE SELECTING ANALYSIS

## Hong Kong Overall Analysis



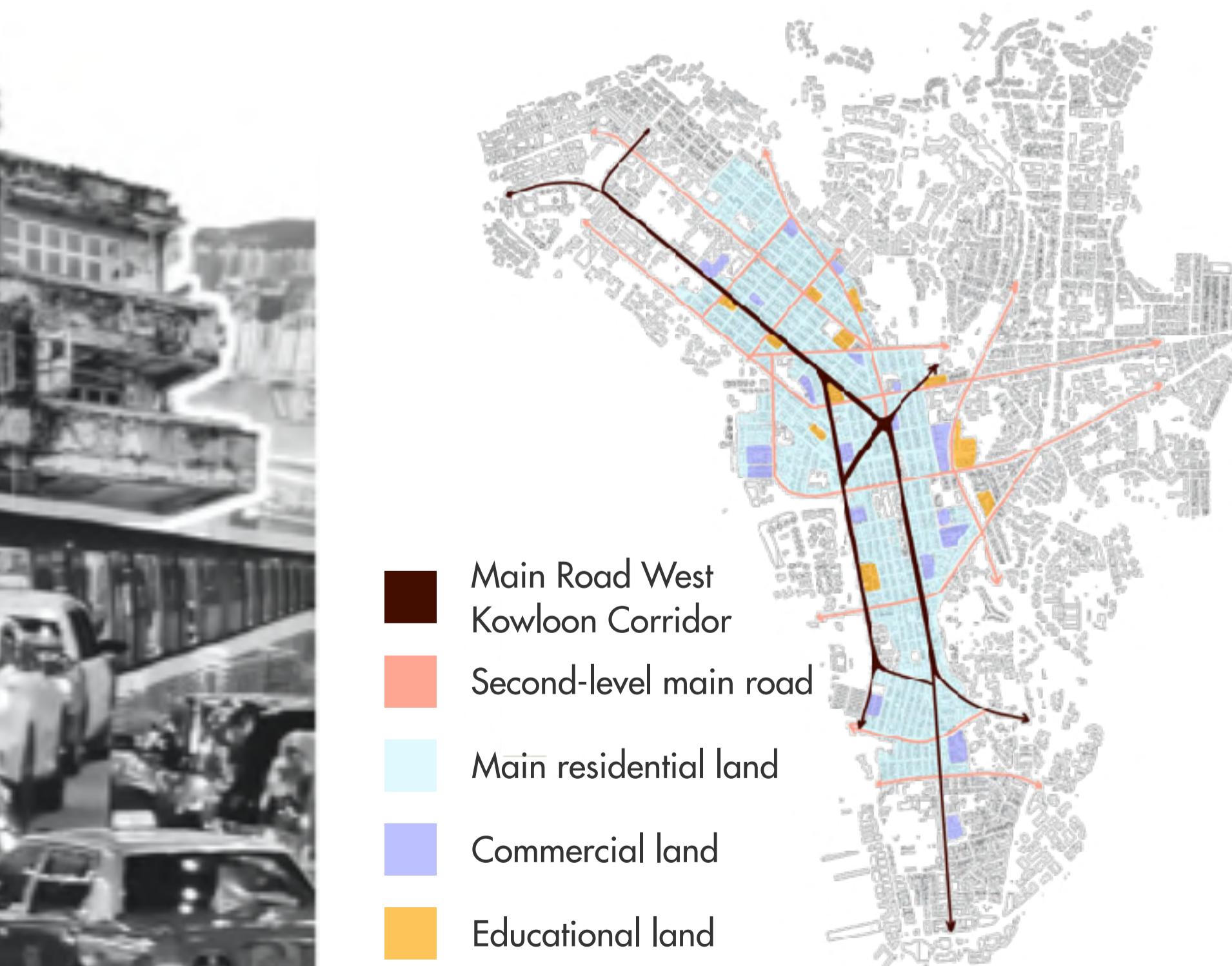
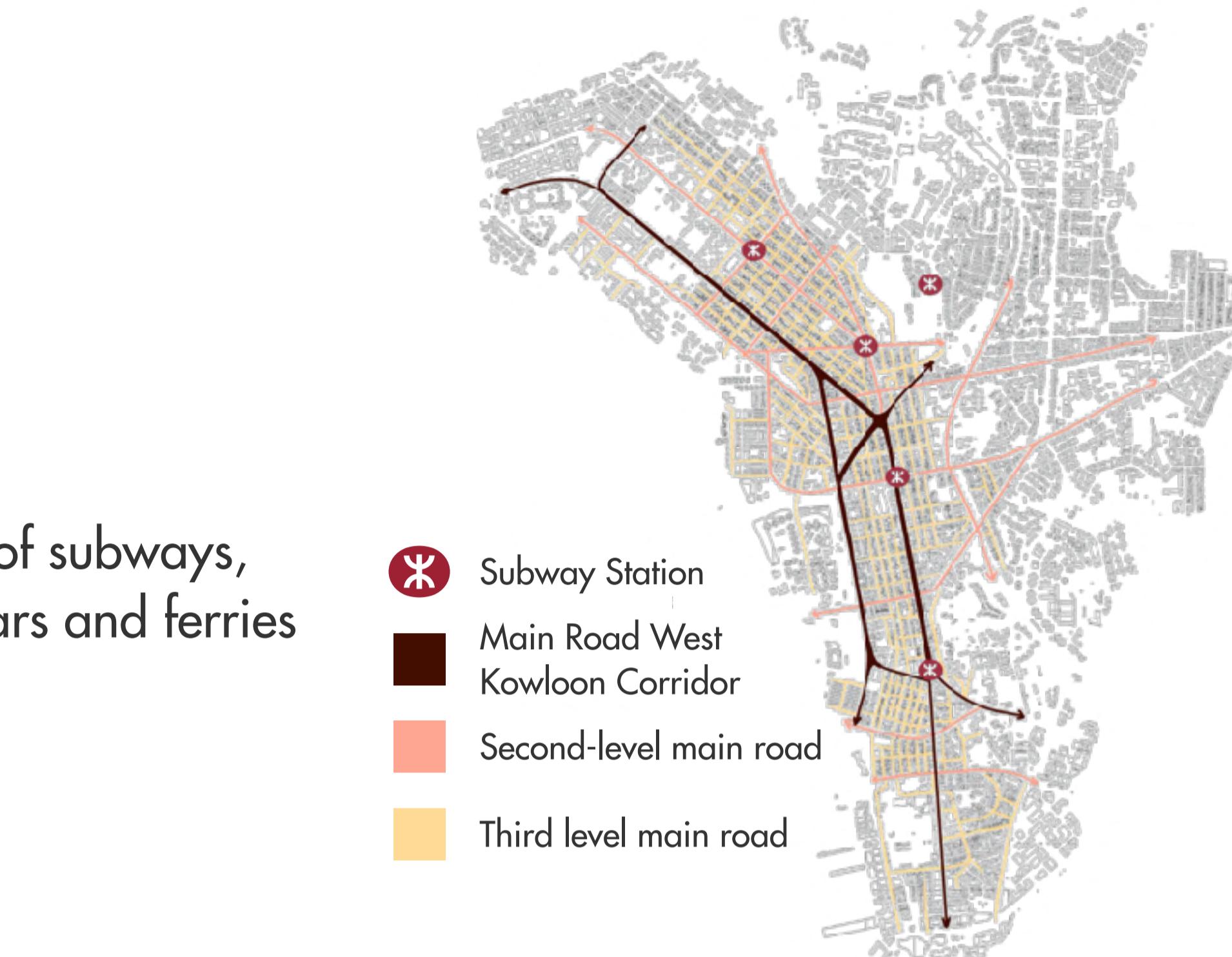
6777 people / km<sup>2</sup>,  
ranking NO.4 in the world



Tall buildings  
crowded streets



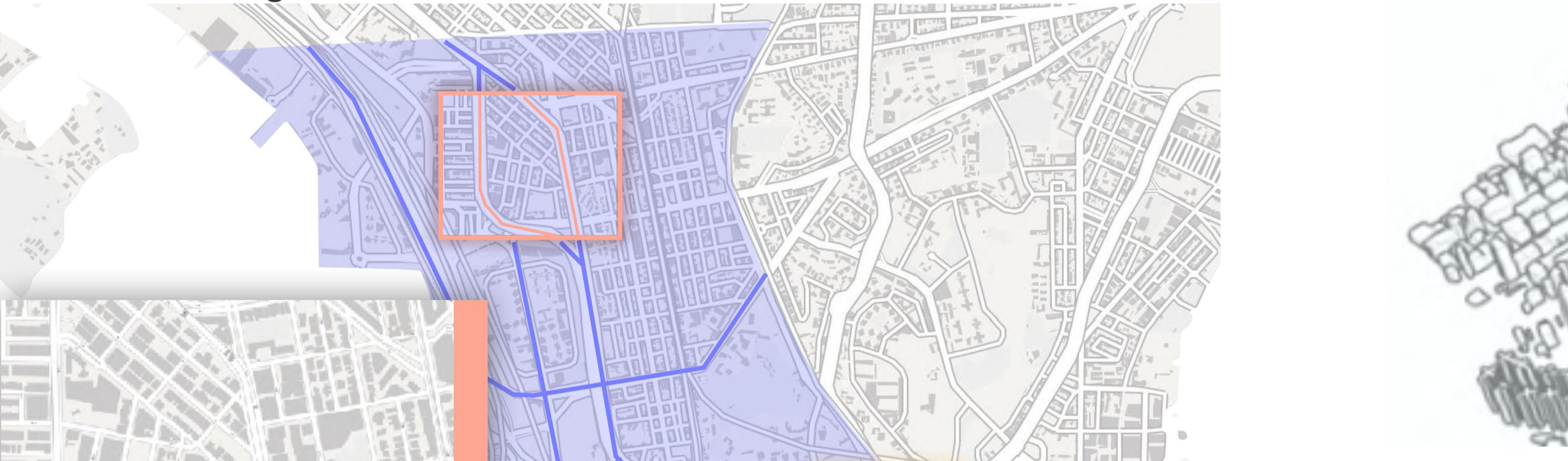
No streets, full of subways,  
taxis, private cars and ferries



# SITE SELECTING ANALYSIS

## Regional Analysis

Yau Tsim Mong District



16

21

Primary School/Second School/  
College/Tutorial School

Age from 6 to 24

Along W Kowloon Corridor  
Near Residential Area  
Near Prince Edward Station

The Hong Kong Polytechnic  
University

Age from 20 to 24

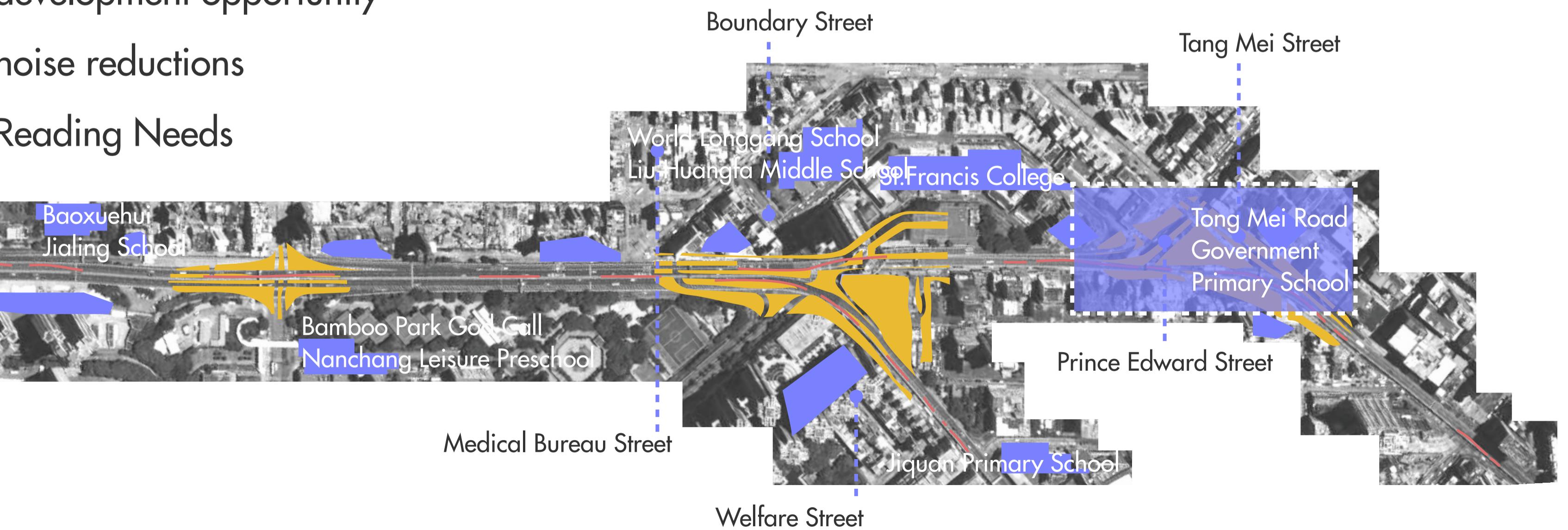
Along Hong Chong Road  
Near Downtown  
Near Hung Hom Station

## Definite Address



## Fixed-point Analysis

- █ Potential development opportunity
- █ Potential noise reductions
- █ Potential Reading Needs



Tong Mei Road Government  
Primary School

This is the location of the  
sidewalk closest to the  
elementary school and the  
main entrance to the  
space under the bridge

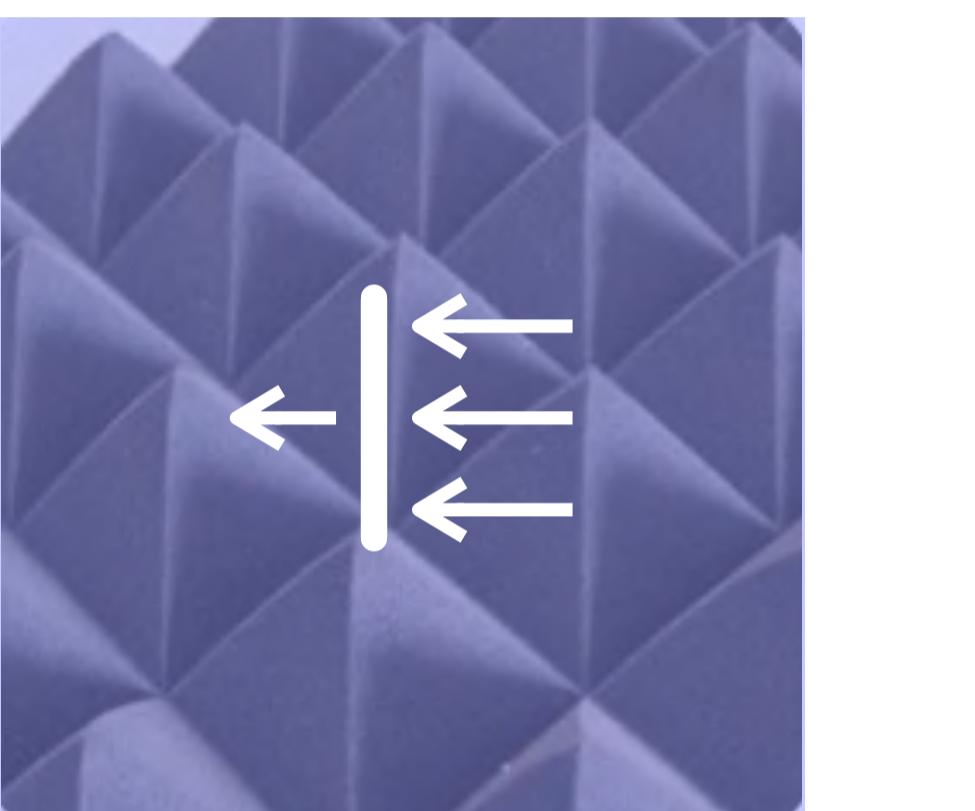
From the location of the sidewalk to the location of the school, it is about a linear distance of 82M. The space under the bridge of the viaduct is 10M. So the area under the bridge is roughly elongated.



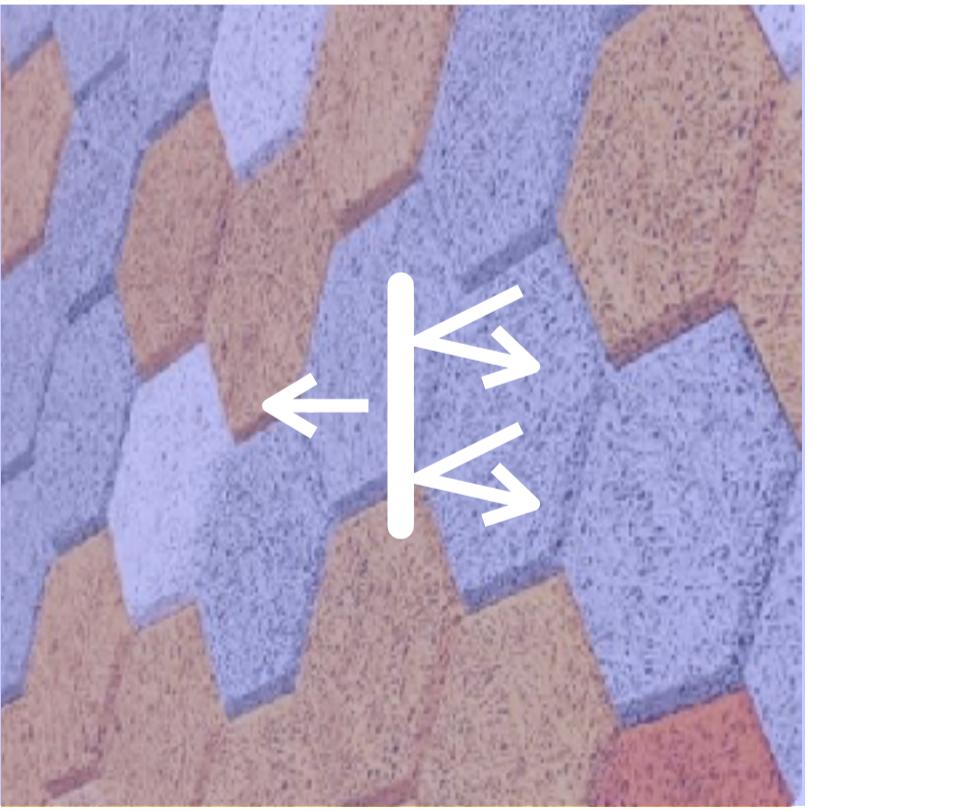
# SITE ANALYSIS

# MATERIALS ANALYSIS

## Materials Analysis

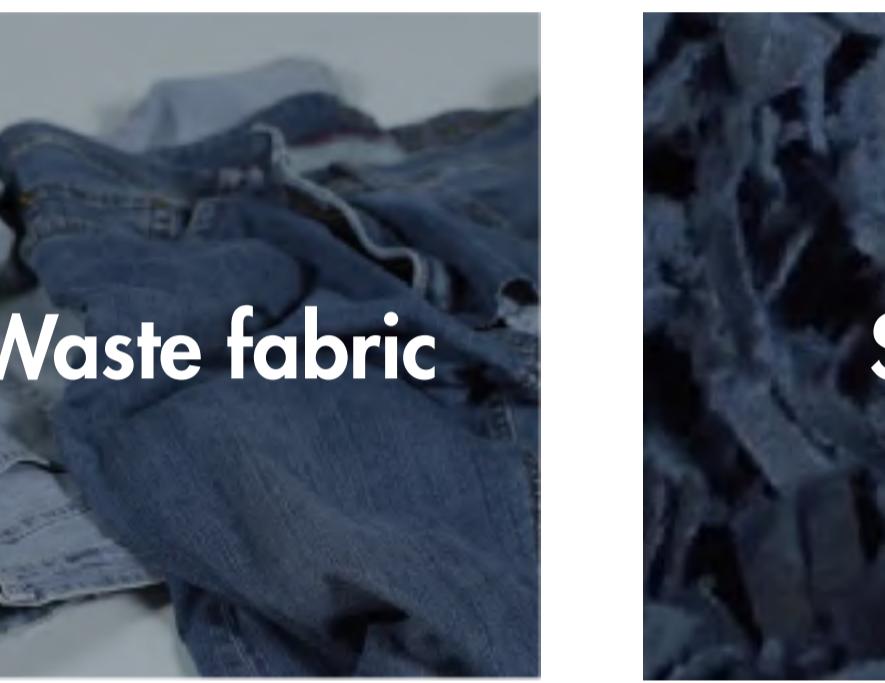
17  
21

Sound-absorbing Materials



Sound-insulation Materials

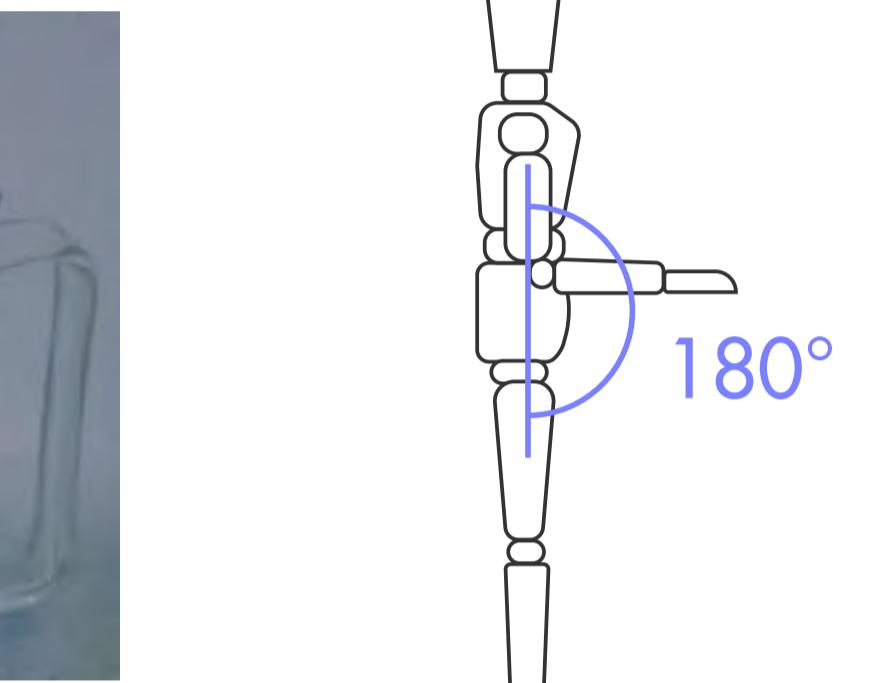
## Reuse of "Fashion trash"



Waste fabric



Shred



Take out



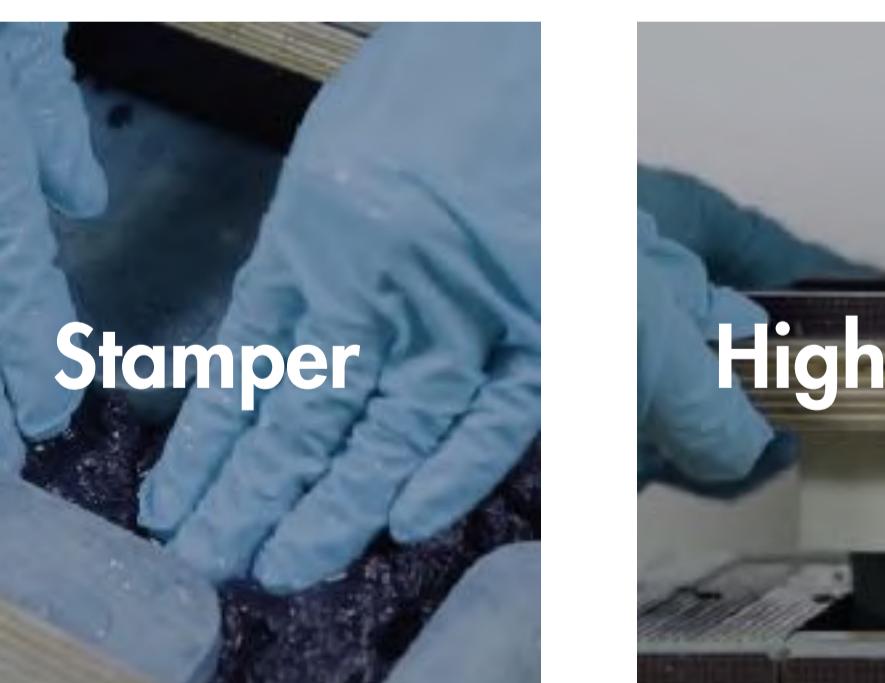
Soak



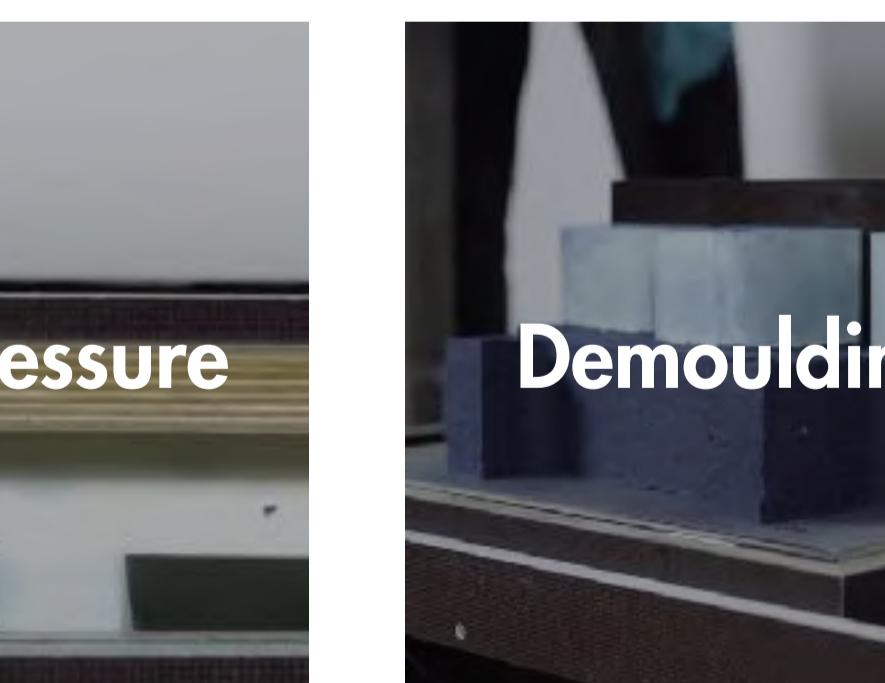
Smash



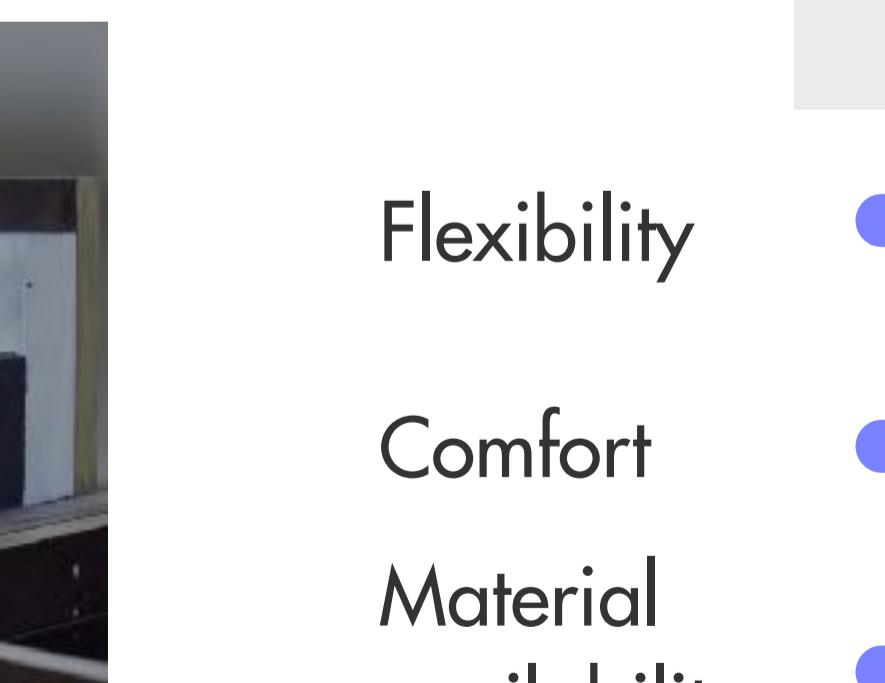
Squeeze



Stamper



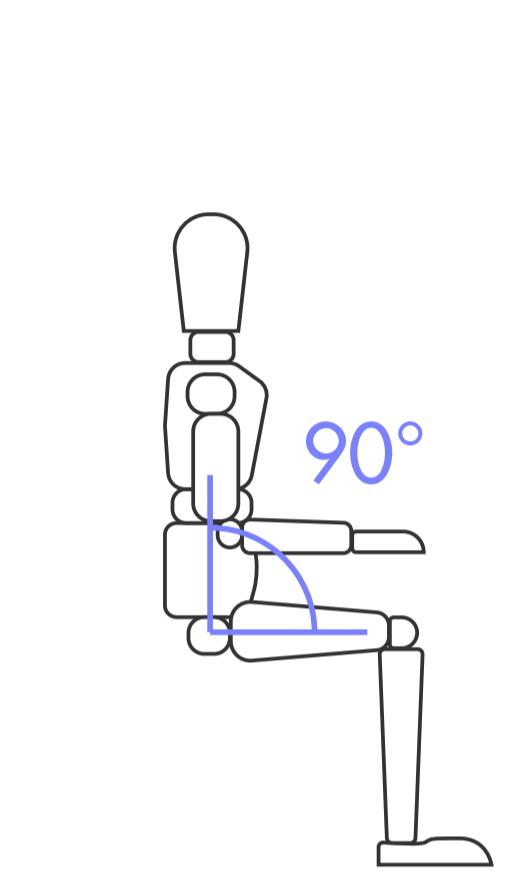
High pressure



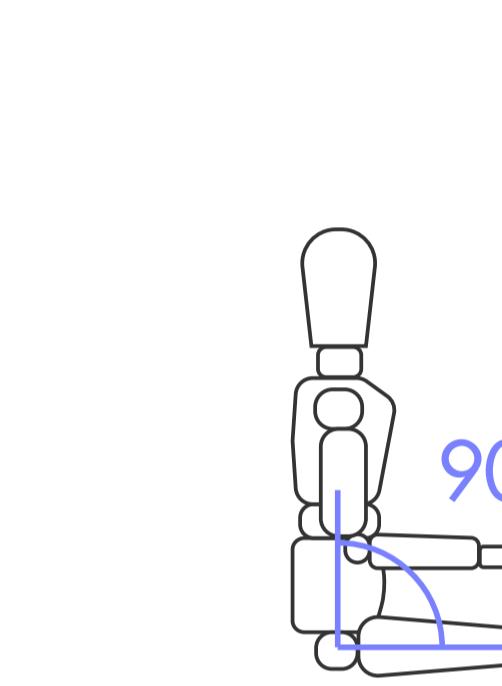
Demoulding

# FURNITURE DESIGN

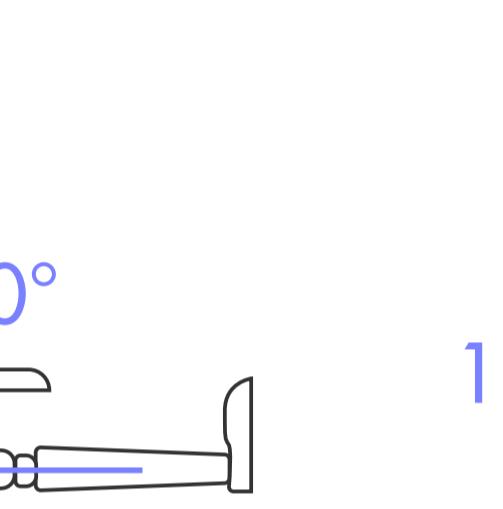
## Human Engineering



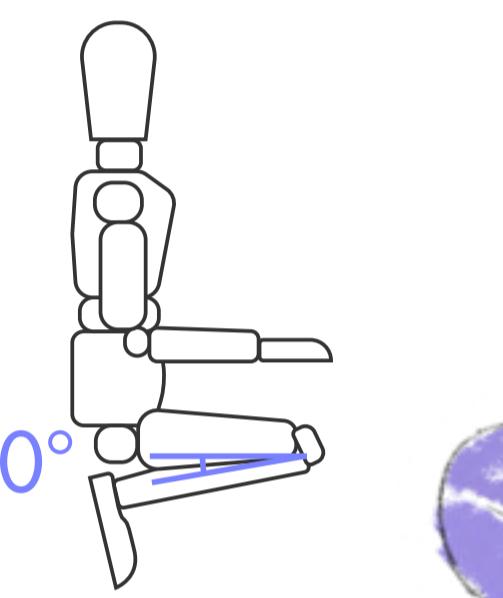
180°



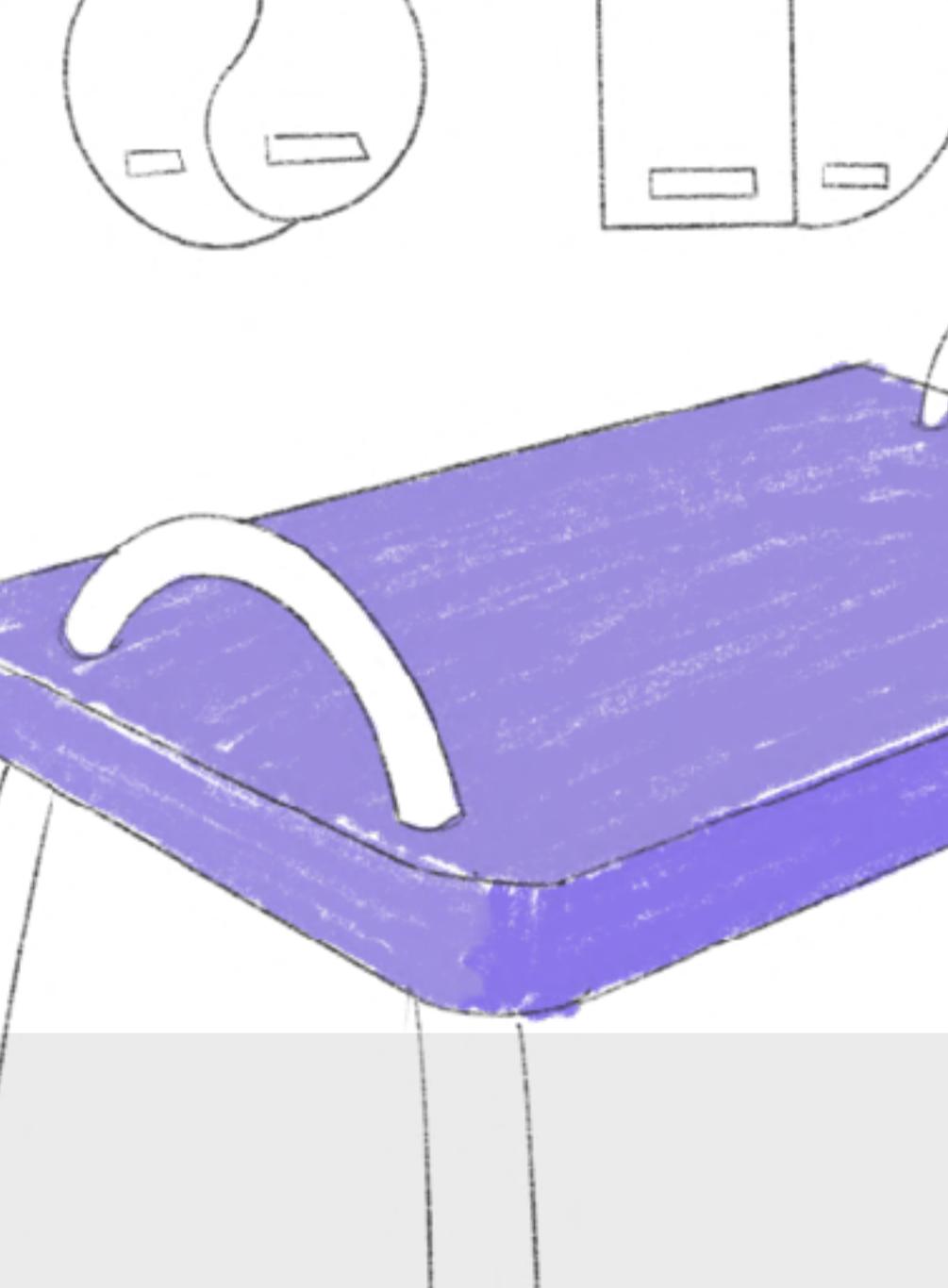
90°



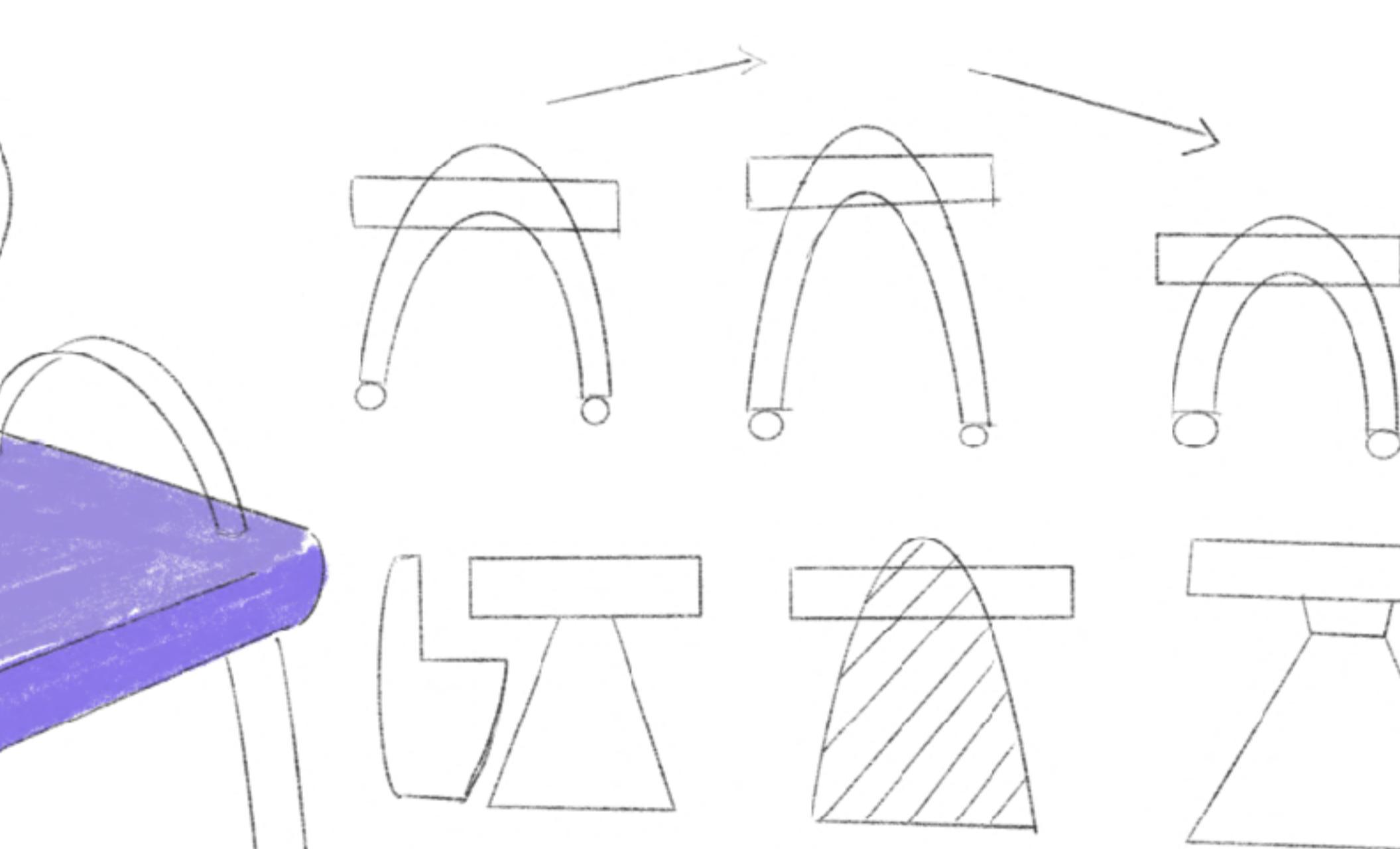
90°



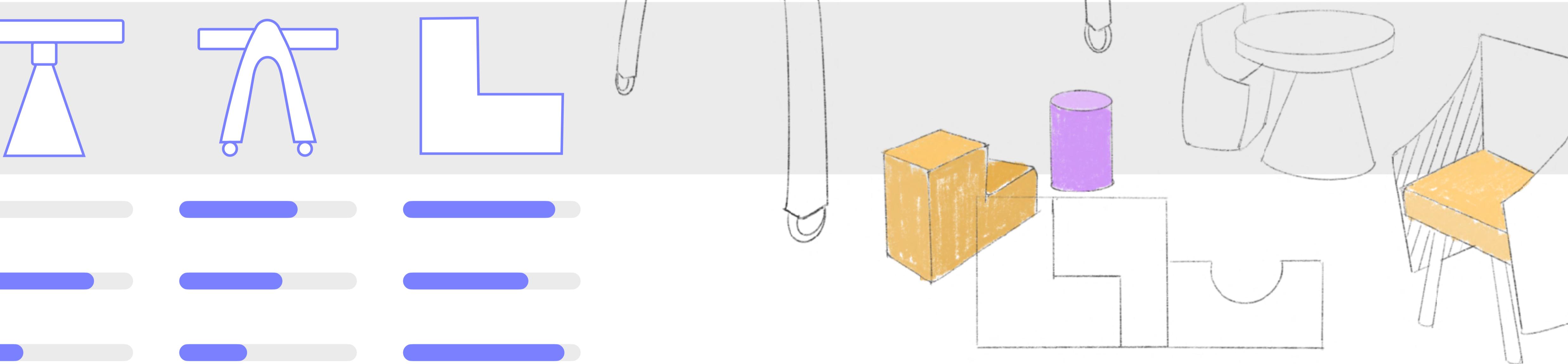
10°



## Sketch



## Comparison of Different Furniture





## FURNITURE DESIGN

### Tables and Chairs in the Discussion Area

The bottom of the table legs is equipped with rollers for easy movement. The desktop adopts a modular design, which can be combined as needed.



### Tables and Chairs in the Reading Area

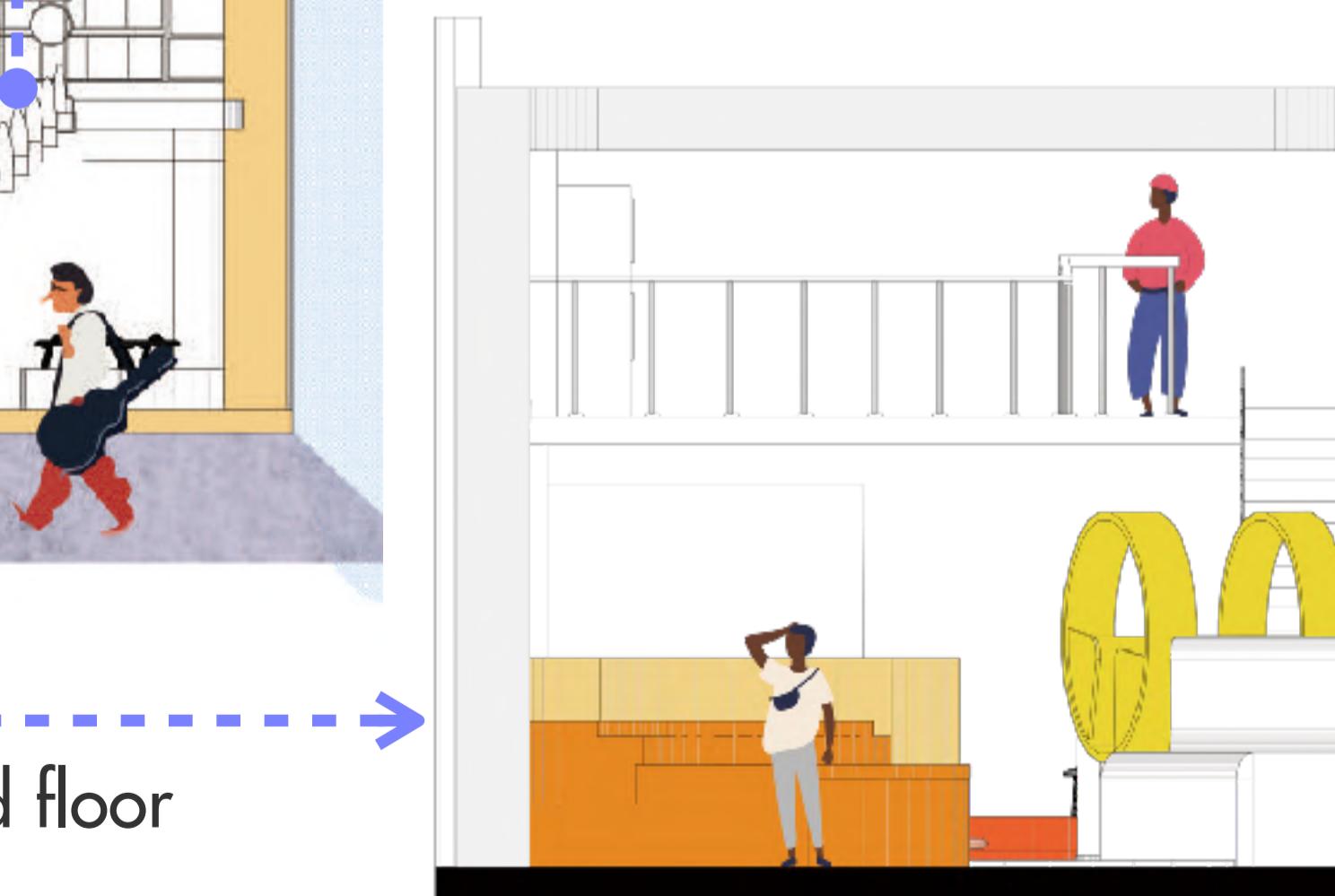
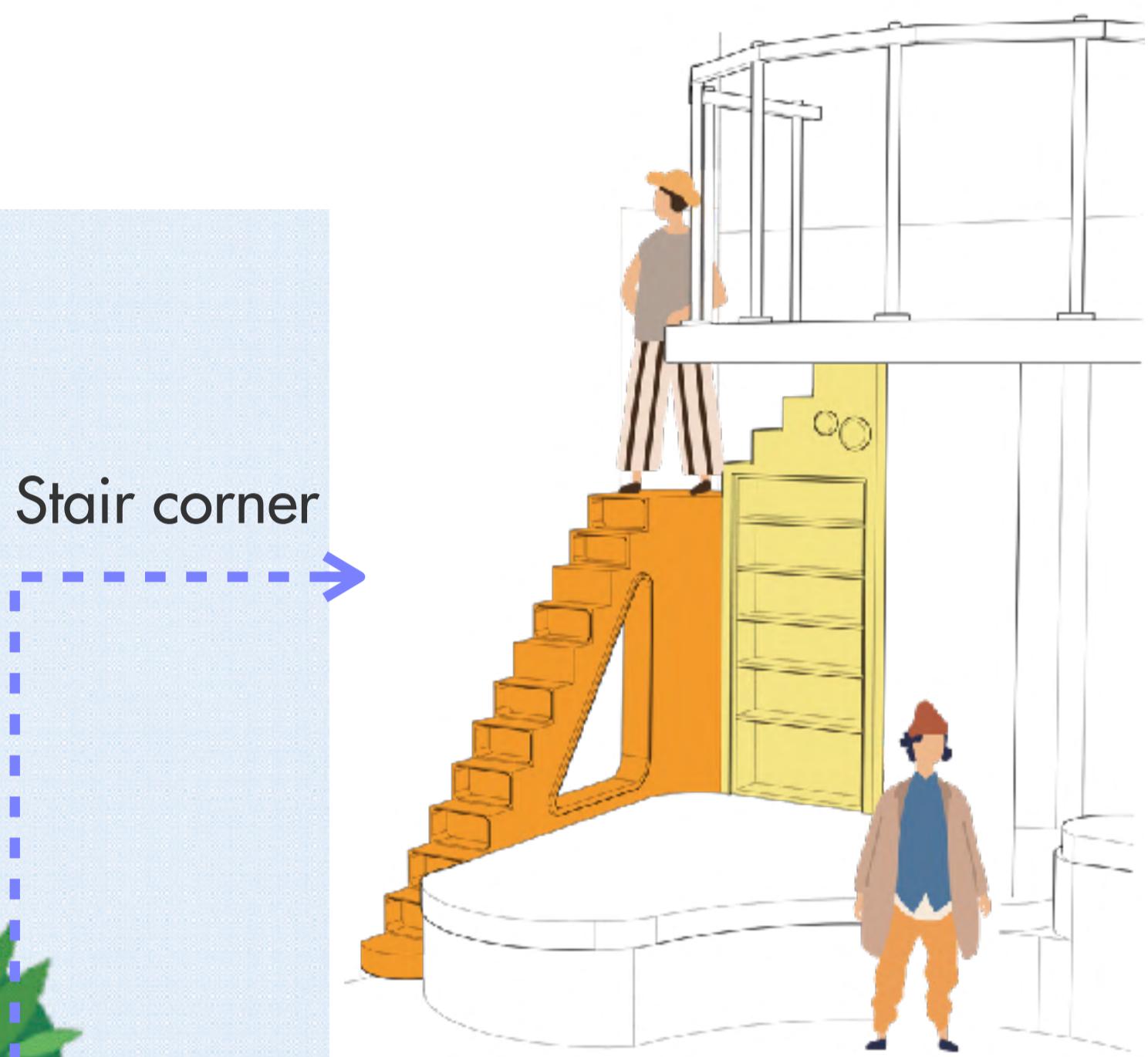
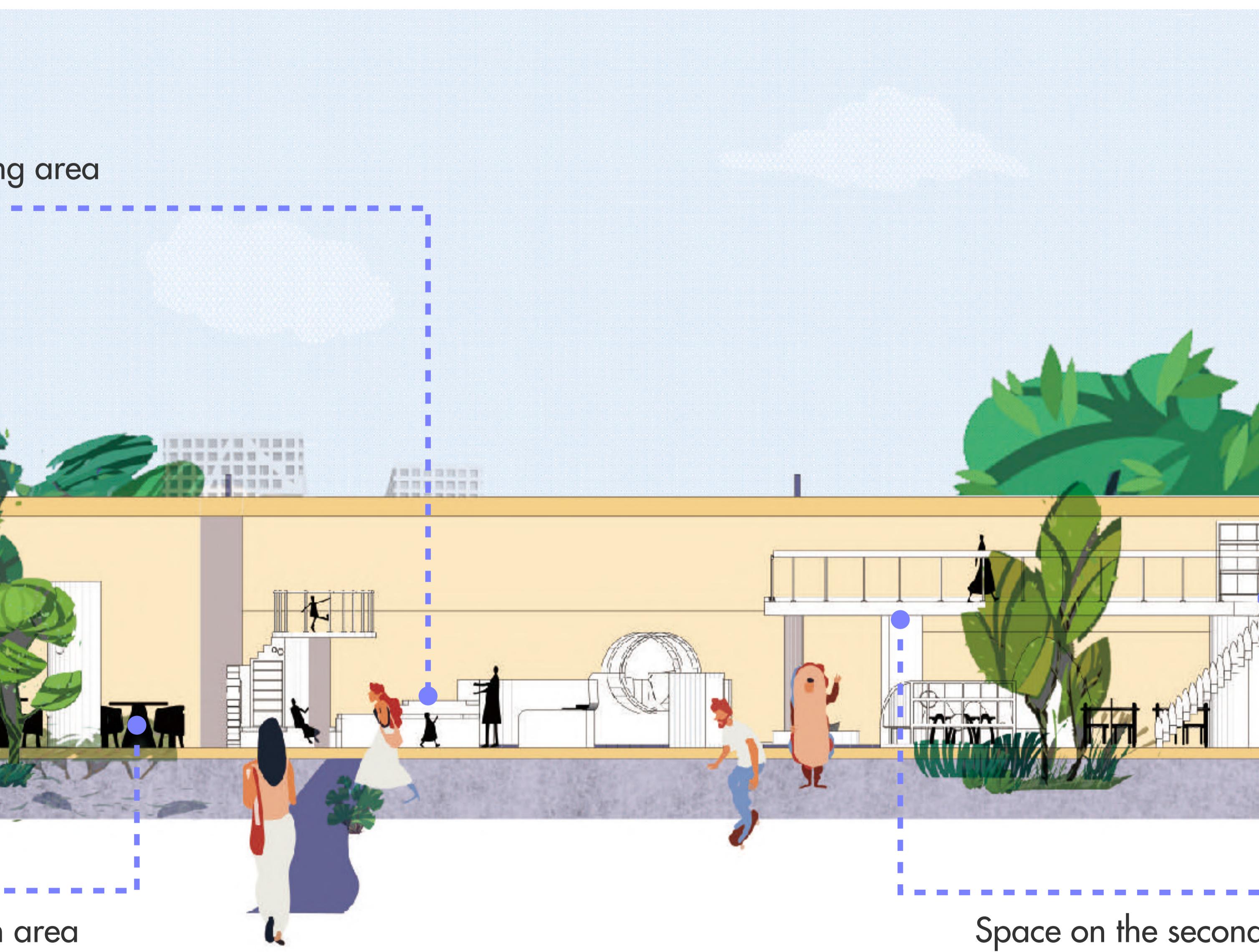
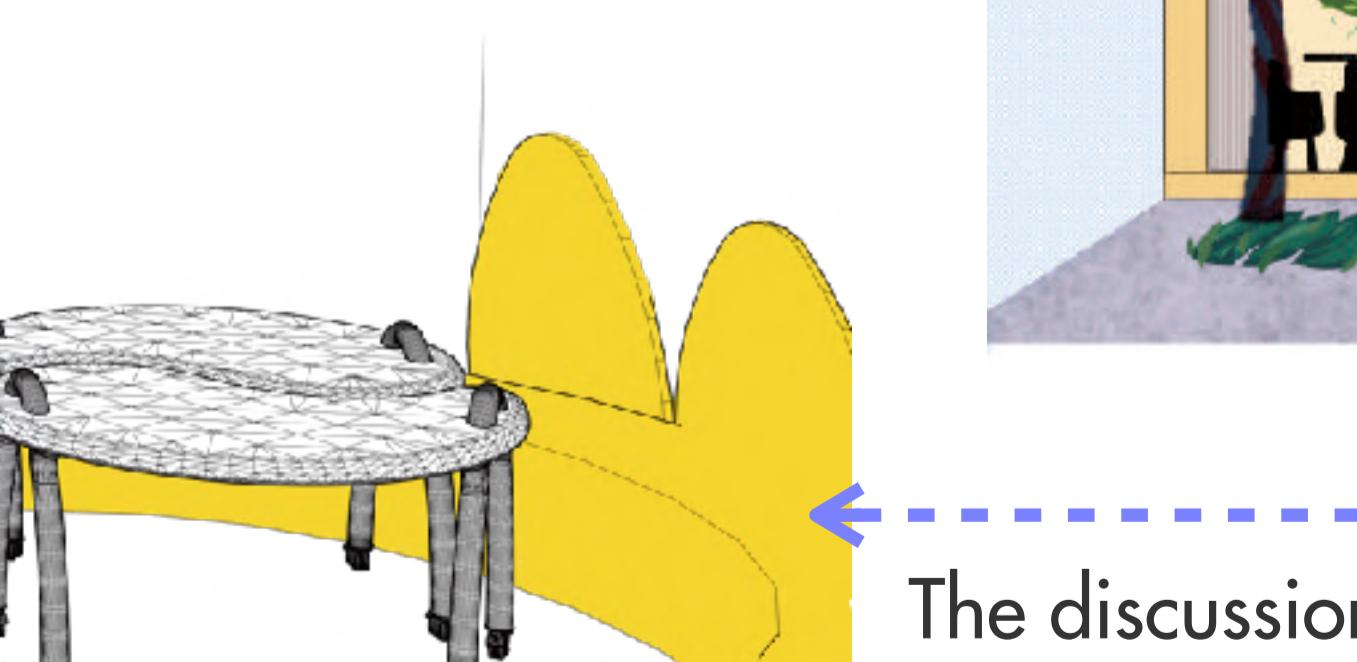
A stable form is used to match the quiet atmosphere of the reading area. The chair can be stored under the table to increase the maneuvering space.



### Free Splicing Furniture in the Active Area

Free splicing furniture is the reuse of "Fashion trash", which can be spliced freely by children to increase children's creativity and to absorb noise. The cushion can also be attached to the wall to absorb noise.

## INTERIOR DESIGN



# Ice Lab - How to bring changes to life with non-electronic products?

## 04 PRODUCT DESIGN

### Team Work

Concept, Storyboard,  
Packaging Design,  
Video

2019.11-2019.12

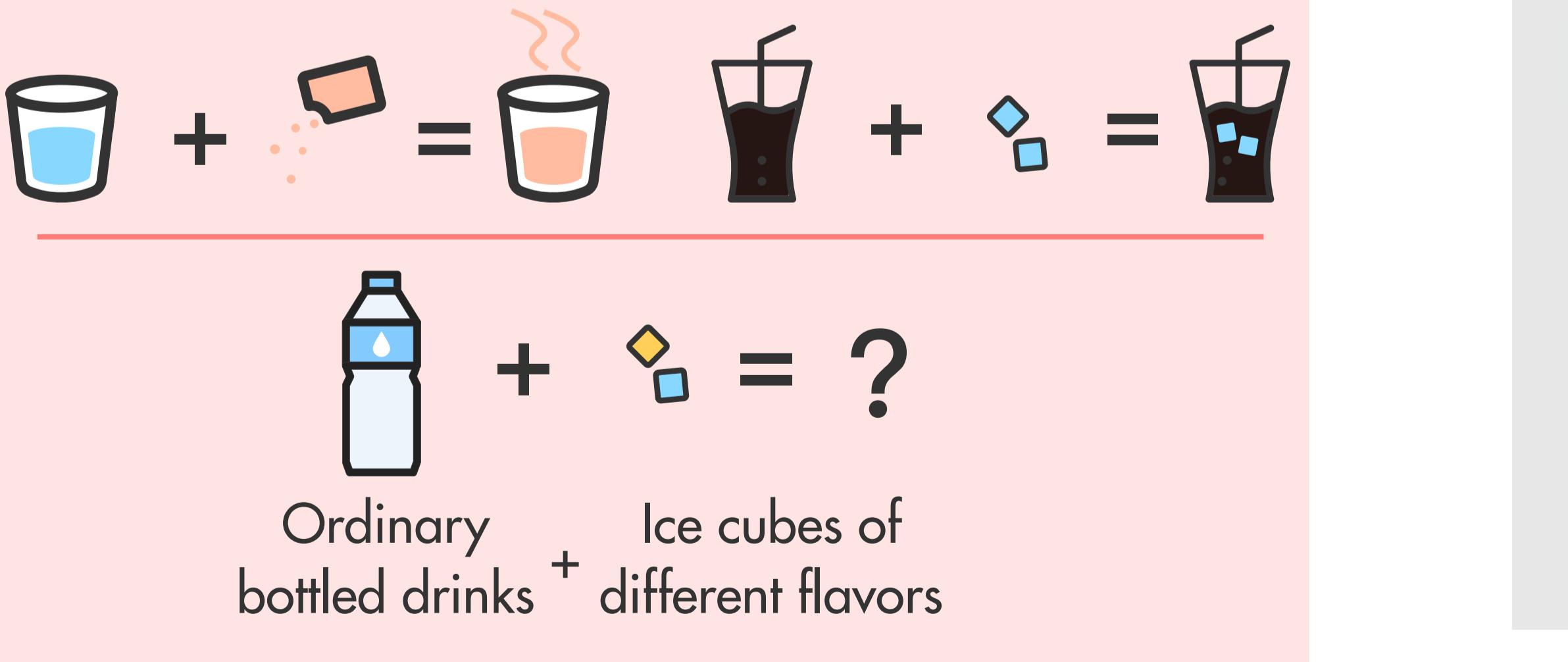


## SCHEME EXPORT

### Brainstorming

20  
21

### Scheme Export



## BRAND DESIGN

### Logo



### Brand Application

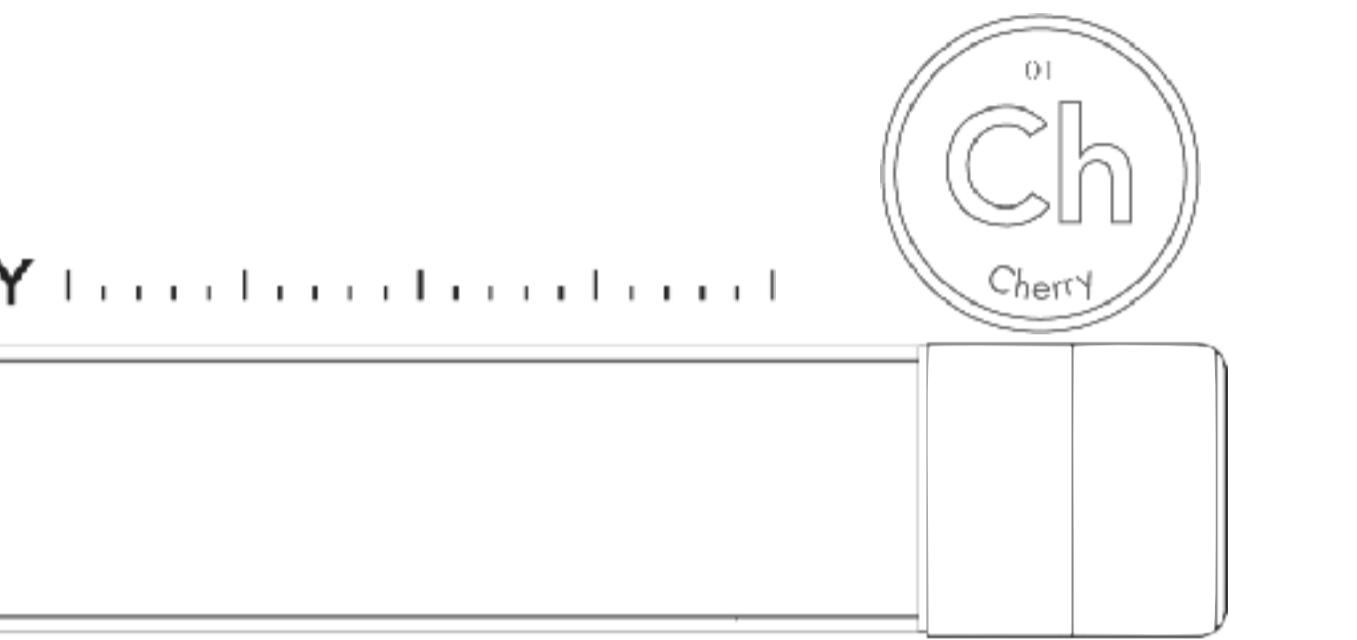


### Slogan

*Ice Lab*  
*Life is a lab!*  
*Let's try!*

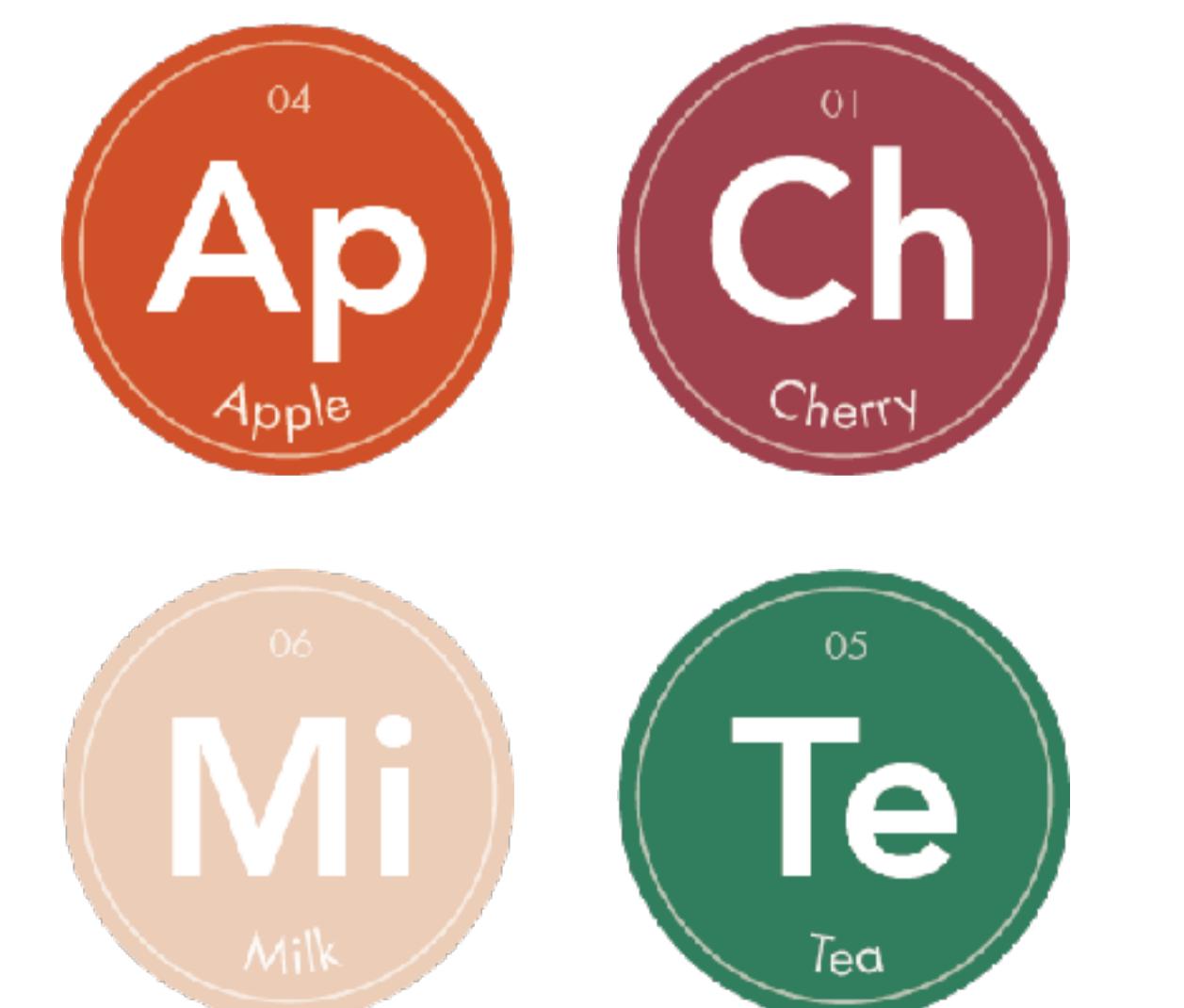
## PRODUCT DESIGN

### Overall Package Design



Following the naming of chemical elements, the first two letters of the word are used to indicate the taste

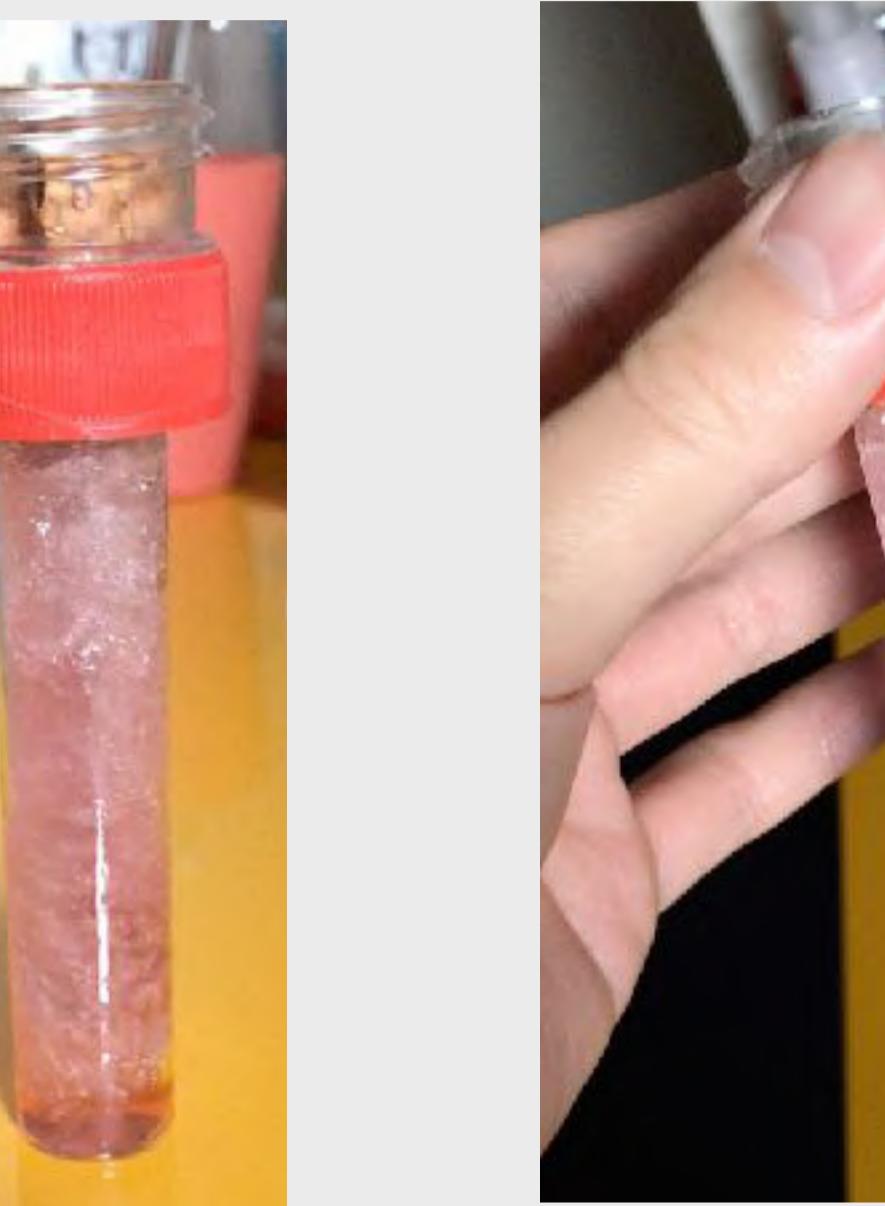
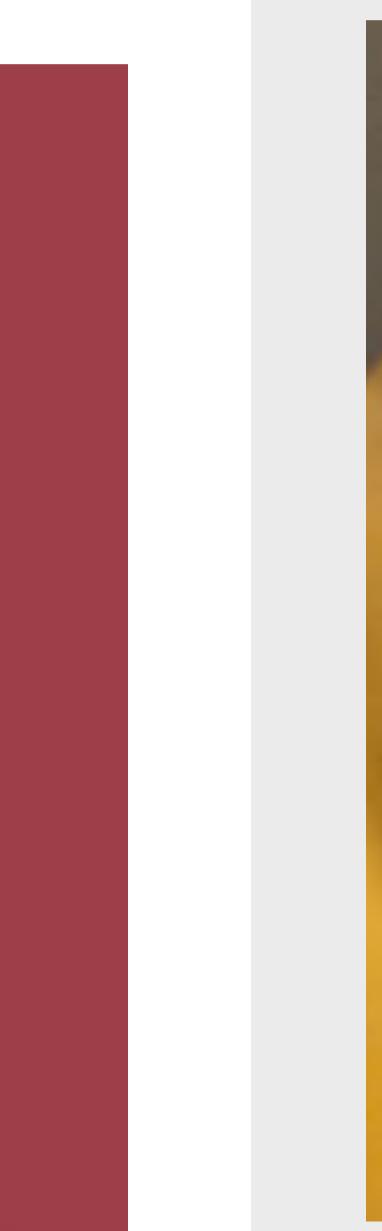
### Bottle Cap Packaging



## PRODUCT DESIGN



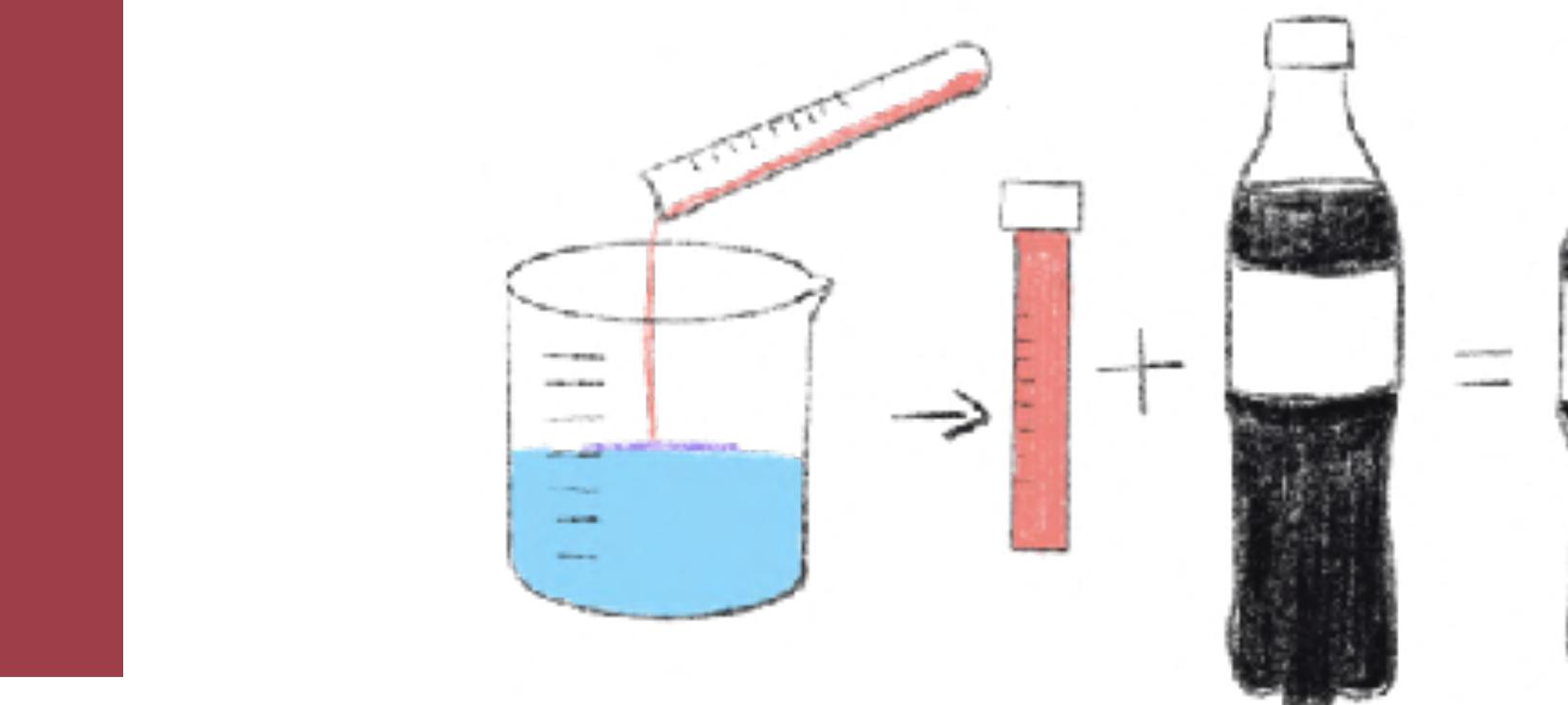
### Model



### Model components:

1 Coke bottle cap + 1 Coke bottle mouth + 1 Small test tube

### Design Show



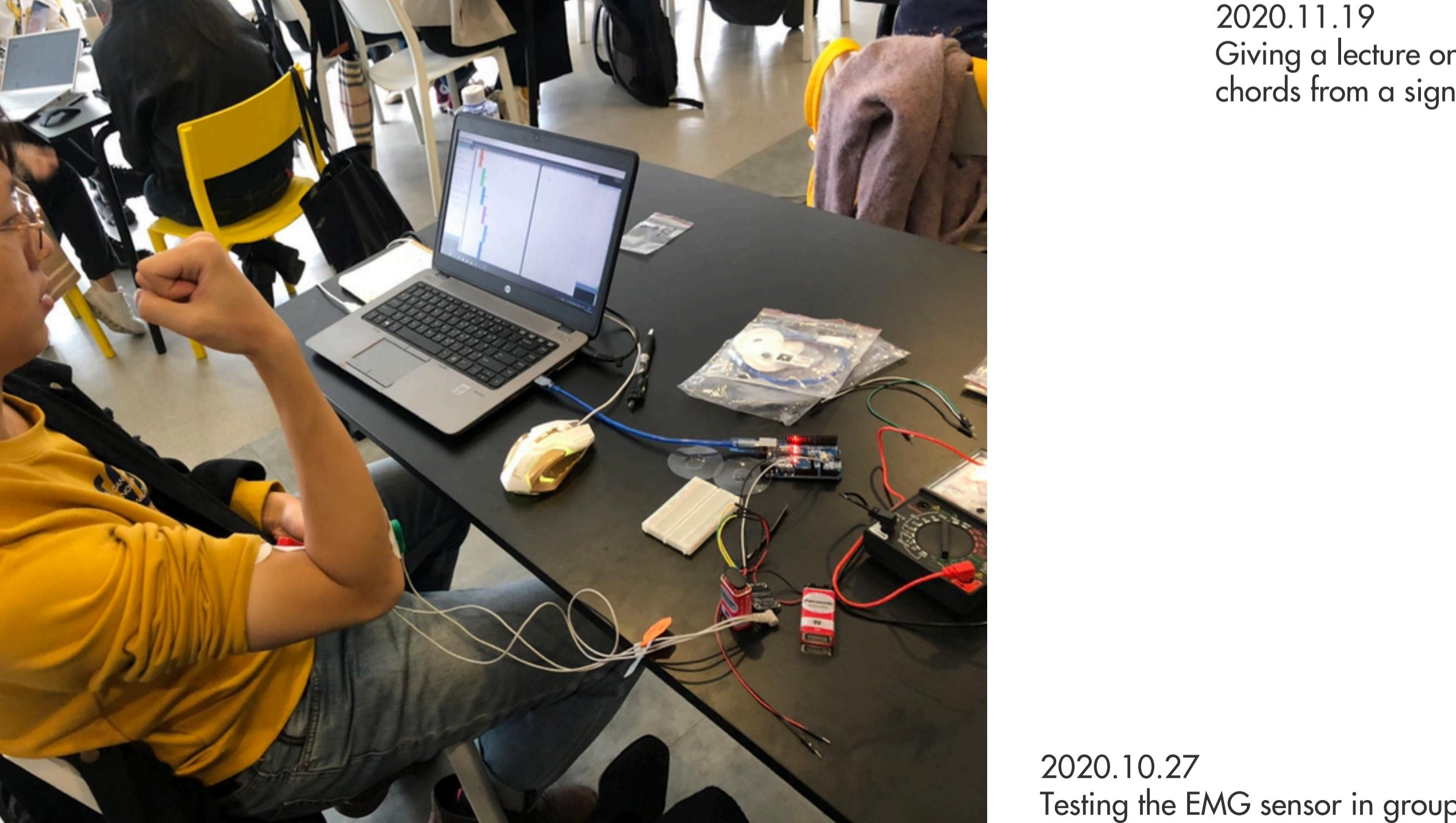
# MY LIFE SILHOUETTE

21

21



2019.12.24  
Recording Christmas Eve song at home



2020.10.27  
Testing the EMG sensor in group study



2020.11.19  
Giving a lecture on 'How to explain the music chords from a signal perspective' in college



2020.8.29  
Polishing the prototype in lab



2019.7.25  
Traveling with friend in Atami Japan