



**REBUILDERS**  
Reduce • Reuse • Reimagine

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# INTRODUCTION

01



## PREFACE

We as a package designer and a product designer are passionate about using our ability to make meaningful change to the community beyond creating beautiful things. However, we also have concerns about how our design creates negative impacts on the environment.

With the shared passion to bring positive impact to our community and environment, we partnered and started our thesis journey. The goal of our thesis is to tackle the waste crisis and bring a new perspective of waste materials.



## WASTE noun.

Materials that is not wanted; the unusable remains of somethings

Similar: **Trash** **Junk**

## BACKGROUND

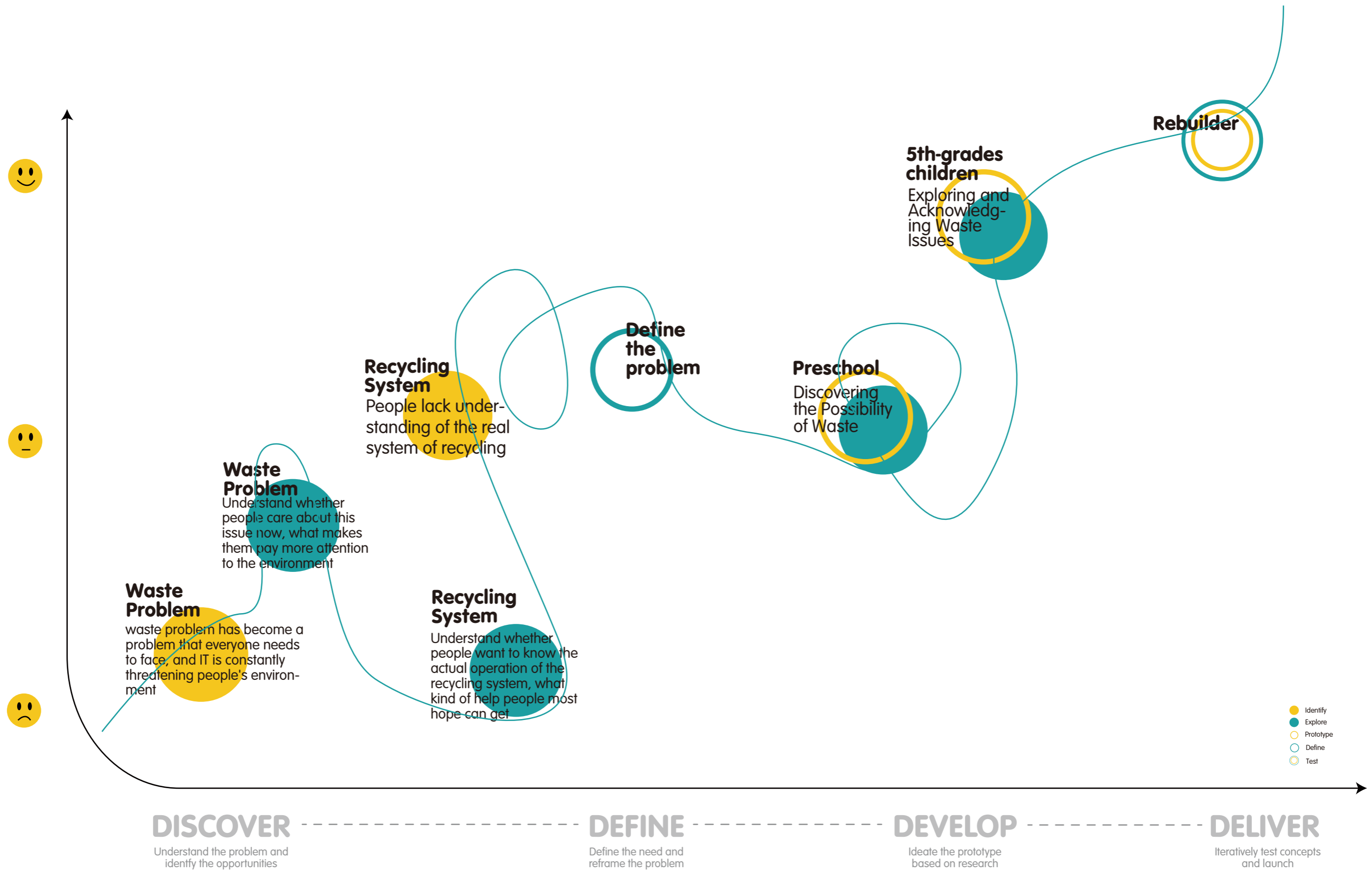
Waste, in general, is unwanted discards, or unusable remains of somethings. With the dramatic growth of population and economy in the last decade, the amount of waste generated continues to increase year by year. Throughout the world, the majority of trash ends up in landfills, an average of 10,000 tons of waste per day. According to World Bank research, the world generates at least 3.5 million tons of solid waste a day, ten times the amount a century ago. If nothing is done, that figure will grow to 11 million tons by the end of the century.

A major part of the issue regarding global waste production is that the negative effects on wildlife, ecosystems, our community, and health are enormous. Additionally, we live in an area of throwaway consumerism quickly producing and wasting things to trash, which also worsens the waste crisis. Fortunately, New York set up a goal of sending “zero waste” to landfills in 2030. A big part of that, many agree, will be spurring greater engagement from the general public.

With a general understanding of the waste problem, we ask ourselves a simple question: **How can we bring awareness among people about the waste problem?**

***“We can't achieve zero waste by ourselves. I feel like what we're trying to do is provide all New Yorkers with the tools, because they're the ones who achieve it at the end of the day.”***

***- Kathryn, DSNY Commissioner***



# 02

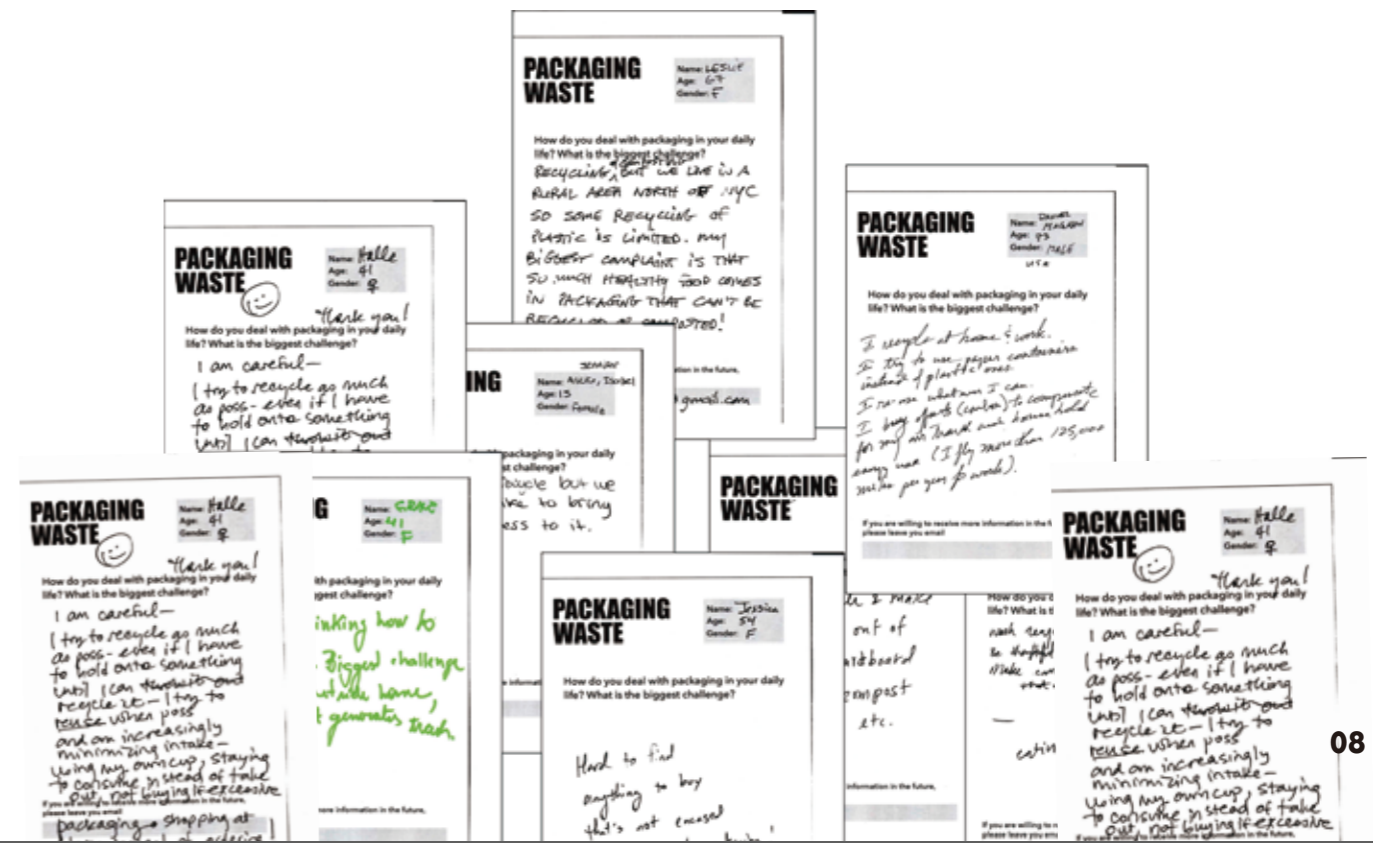
# RESEARCH

## Summary

At the beginning of our research process, we didn't know where we would end up yet. But we knew that the public plays an important role in the Zero Waste process. Therefore, our research started with the assumption that people care about the waste problem and the negative effects on the environment. The aiming of research was to analyze the existing methods of waste management and prevention.

## Research Strategy

We did the primary research to directly understand people's attitudes by interviewing and observing different groups. We also did a couple of volunteering in NGOs that committed to addressing environmental issues. Meanwhile, our secondary research focuses on analyzing the waste system and identifying the challenge and opportunities.



# PHASE ONE

## Public Attitude Regarding Waste Problem

### GOAL

The engagement from the general public is the key to get closer to the Zero Waste mission. In this phase, our goal is to understand the public's attitude to the waste crisis and the awareness of their personal responsibility.

### METHODOLOGY

Intercept Interviews, Questionnaire, Probes

### KEY QUESTIONS

- How does the public think about the waste problem?
- Are people aware of the effects of waste disposal?
- How do people deal with the waste they produce?

### LEARNINGS

- More than two-thirds of interviewees responded that they have taken personal responsibility towards the environment by doing recycling.
- People believe that recycling is a simple and effective way to solve environmental problems.

**How can we galvanize the public engaging in waste prevention in order to tackle the global waste crisis?**



20+ questionnaires 50+ Intercept Interviews



“ I do recycling and composting. But we live in a rural area north of NYC, so some recycling of plastic is limited.”

“ My biggest complaint is that so much healthy food comes in packaging that can't be recycled.”

“ I try to recycle packaging as much as possible and also shop in store instead of ordering”

# PHASE TWO

## Analysis of Waste System

### GOAL

To analyze the recycling system and identify the challenges in order to understand how can we support the public to deal with the waste they produce.

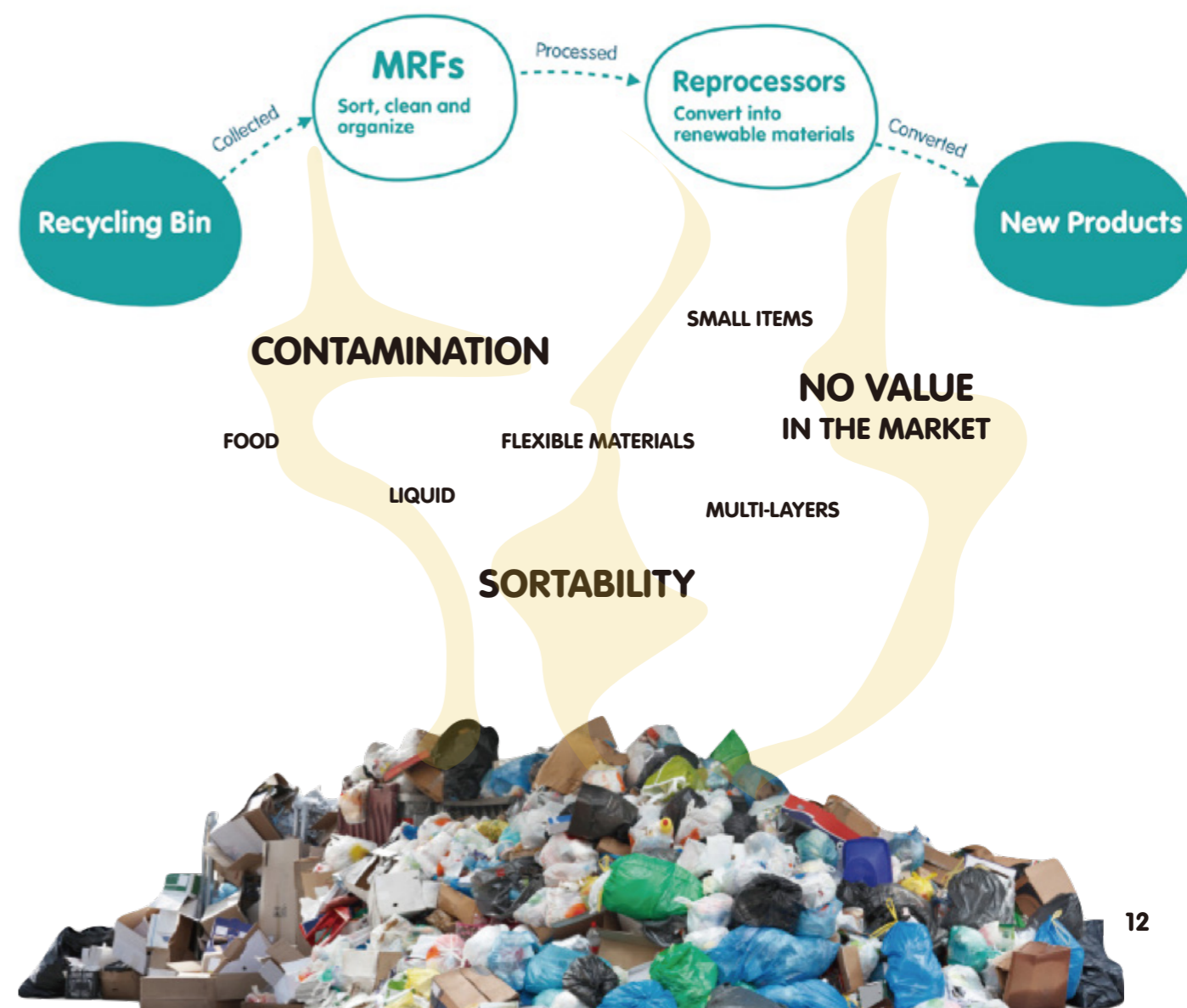
### METHODOLOGY

Secondary Research

### LEARNINGS

Individual waste is one of the main contributions to waste disposal. Despite the fact that people are recycling more than ever, each person in the United States continues to generate about 4.4 pounds of municipal solid waste per day.

The challenge of the Recycling system is that the recycling system refers to a series of activities. During the process, there are many limitations and restrictions, which led to the consequence that more than half of items technically recyclable still end up in the landfill. This research brings us to the next question: **There is no single method that can manage all our nation's garbage. The public needs to think about how they as consumers can do before recycling.**





# PHASE THREE

## Methods of Waste Management

### GOAL

To fill the gap of the recycling system by identifying the methods that people can take to deal with waste and meeting with groups who commits to making effort in reducing the amount of trash

### METHODOLOGY

Interviews, volunteering, Observation

### KEY QUESTIONS

- In addition to recycling, Is there have any simple way to relieve the pressure waste problem brings to the environment?
- Who is (or will be) a powerful influencer?

### LEARNINGS

Through volunteering and Interviewing NGOs such as BigReuse, Material Center, Materials for the Arts, New York Cares, and Terracycle, we learned various ways to manage and prevent waste. The most classic methods are the “3Rs” — Reduce, Reuse, Recycle We all learned these methods in the schools when we were children. After having a deeper understanding of waste management, we decided to shift our focus to environmental education.



### INSIGHT

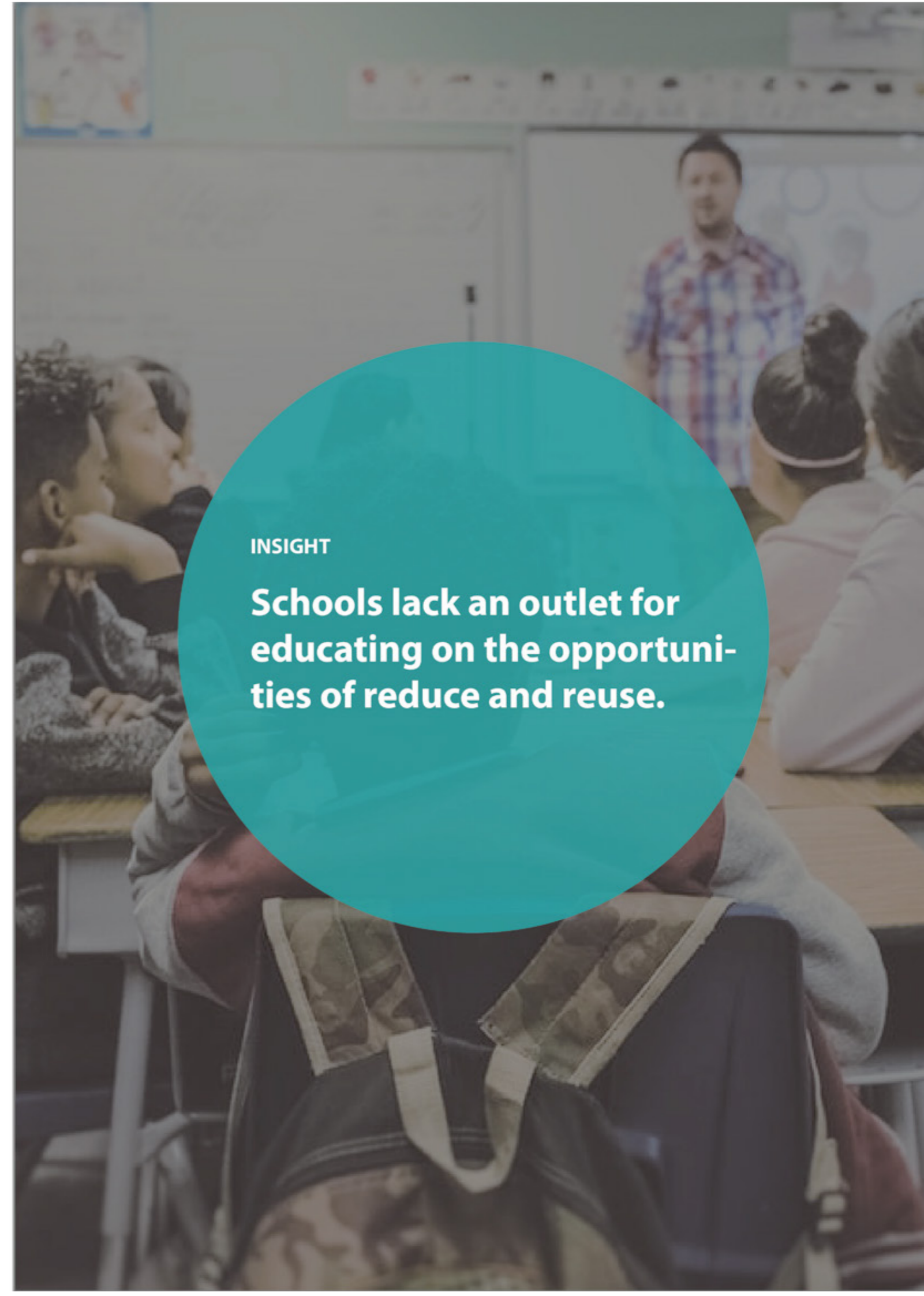
**The portion of waste disposal can be significantly reduced by reducing, reusing, or recycling— the “3 Rs” of solid waste management.**

# Problem Reframing

Through our research, we understood that the key of tackling the waste crisis is environmental education. After meeting with a couple schools to understand how children learn the waste management in schools, we recognized a problem:

**Many schools focus on the recycling education but they rarely provide students the opportunity to experiment other methods of waste management.**

The good news is that teachers are eager to promote environmental awareness in the schools. After building a partnership with NYC schools, we pivoted our thesis to specifically focusing on child education by narrowing the environmental education to the 3Rs - Reduce, Reuse, Recycle, and highlight creative reuse as a method for cultivating children's awareness and potential actions. The next step is to understand the needs of current environmental education in the NYC schools.



## INSIGHT

**Schools lack an outlet for educating on the opportunities of reduce and reuse.**

## THESIS STATEMENT

**How might we collaborate with schools to build an educational play program for children to develop new mindsets on the value and opportunities of waste?**



# IDEATION



# PROTOTYPE 01

## Discovering the Possibility of Waste

### OBJECTIVES

In the prototyping process, our activities revolved around discovering the value of waste. We collaborate with a preschool to observe how children interact with waste materials.

### CAMPAIGN INFO

Partner: Preschool  
Participants: 12 kids (3 years old)  
Duration: 1 hour

### PROCESS

In this activity, we gathered a wide variety of recyclables and waste materials that people usually throw away and brought them to class. In the class, we led an activity where children can explore different ways to play with these materials.

### TAKEAWAYS

- Success environmental education depends if learners understand this issue and aware of their responsibility and ability
- Even though the waste issue is a serious problem, a positive vibe is essential. Let kids know what they can do to the problem is important than tell them how horrible the problem is
- How deep the activity can teach kids will reflect on their age and what they have already known

*"By concretely weaving repurposed materials into children's experience, we can provide them with the beginning of thoughtfulness when it comes to the environment."*



### INSIGHT

**How can we make reusing activities and waste management interesting, fun, and an integral part of environmental education?**

# PROTOTYPE 02

## Exploring and Acknowledging

### OBJECTIVES

Based on our research and first prototype, we decide to work with an elementary school and collaborate with their art class. Our goal is to understand how older kids respond to waste problem and to prototype reusing activity along with knowledge delivery.

### CAMPAIGN INFO

Partner: Elementary School

Participants: 15 kids (5th grades)

Duration: 1 hour

### PROCESS

This art class started with the conversation around the waste materials we brought to class to help children understand the connections among waste disposal, the use of resources, and the effects of environmental impacts. After that, children can select 5 materials to make crafts and explore different ways to arrange them.

### TAKEAWAYS

- 5th-grades children already have basic knowledge of waste management .
- They are desired to contribute to the waste problem.



### INSIGHT

How can we motivate children to think critically about their own actions and to rethink their own resource values and waste conservation?

Through the **Research, Prototypes,** and **Feedback** from children and teachers, we restructured the activities to focus on the four principles as our final intervention criteria:

## DESIGN PRINCIPLES

### **Structured Lessons**

Clear structured information and resources are essential for teachers to lead the activities

### **Cultivation of Awareness**

Foster conversation around reimagination and environment during the activities

### **Actionable Activities**

Motivate children to keep explore and experiment in their everyday lives

### **Lifelong Changes**

Change children's attitude and behaviors by instilling environmental awareness in order to make thoughtful decisions

**Based on the design principles, our final intervention has emerged...**

# INTERVENTION

04





## REBUILDERS

is an educational play curriculum incorporating a series of actionable activities for teaching children the waste management and resource conservation by motivating them to reimagine and rebuild the value of waste.

### WHY BEAVERS

Beavers are the best natural builders. They are known for their creation of transforming natural materials into their home. We chose beaver as our logo because we believe children can also be the beavers in our community who have the ability to rebuild the value of waste materials.



# CURRICULUM OVERVIEW

This curriculum emphasizes the continuing need to teach the next generation about the importance of 3Rs and to energize schools and communities to promote environmental awareness. Through our research and prototype, we define that our ultimate goal is to support schools' environmental education by building a space where waste becomes the assets in the school and children can sustainably experiment on reducing and reusing. Our vision is to instill environmental awareness and potential action in children. The following is how REBUILDERS delivers this vision.



## What is Reuse?

Learning the waste management options and the results of their actions by **Making a T-shirt bag**

## What are Waste Materials?

using the T-shirt bag as a hunting bag to play the **scavenger hunt** collecting different waste materials

## Make Reuse be Parts of Lives

Setting up a **Reuse Bin** to rescue potential valuable materials while learning the resource conservation

## Exploring and Integrating

Guiding children to explore the different possibility of Reusing; Materials can also be integrated to other classes

## Spread the Word

Using school **bulletin board** as an exhibition to share children's creation and information of waste management

# LESSON ONE

## WHAT IS REUSE ?



## Making a T-shirt Bag

As a start-up of the journey, we will introduce the program and behaviors that conserve resources and reduce environmental impacts. The first activity is making a T-shirt bag. Children will be asked to bring an old, unwanted T-shirt, and we will lead them to transform this t-shirt into a bag.

This activity gives children a sense of what reuse is through hands-on experience. In the class, we also explain behaviors that conserve resources, reduce environmental impacts, and enhance sustainability. Meanwhile, the t-shirt bag can also be a tool for the next lesson.



# LESSON TWO

## WHAT ARE WASTE MATERIALS?



## Scavenger Hunt

Children will receive a hunting list and have a week to gather the potential useful materials. They can also bring along the T-shirt bag they made in the prior lesson to help them sort the materials they found. The mission of this activity is to hunt the potential usable materials in their everyday lives and see how many items can check off the scavenger hunt list. Through the hunting process, it will develop the new mindset on the waste.



After they bring their findings to the class, it's a good opportunity to start the conversation around these waste materials and discuss the connections among the use of resources, waste disposal, and causes and effects of environmental impacts.



# LESSON THREE

## Make Reuse Be Part of Lives



## Reuse Bin

Schools usually have two bins in the classroom: recycling bin and trash bin. In this lesson, we are going to build a new bin - Reusing Bin as known as resource bin. By setting up the reuse bin in the classroom, we provide a new option for children to define the value of waste by themselves. These rescued materials will also become the resources and assets of the classroom activities.

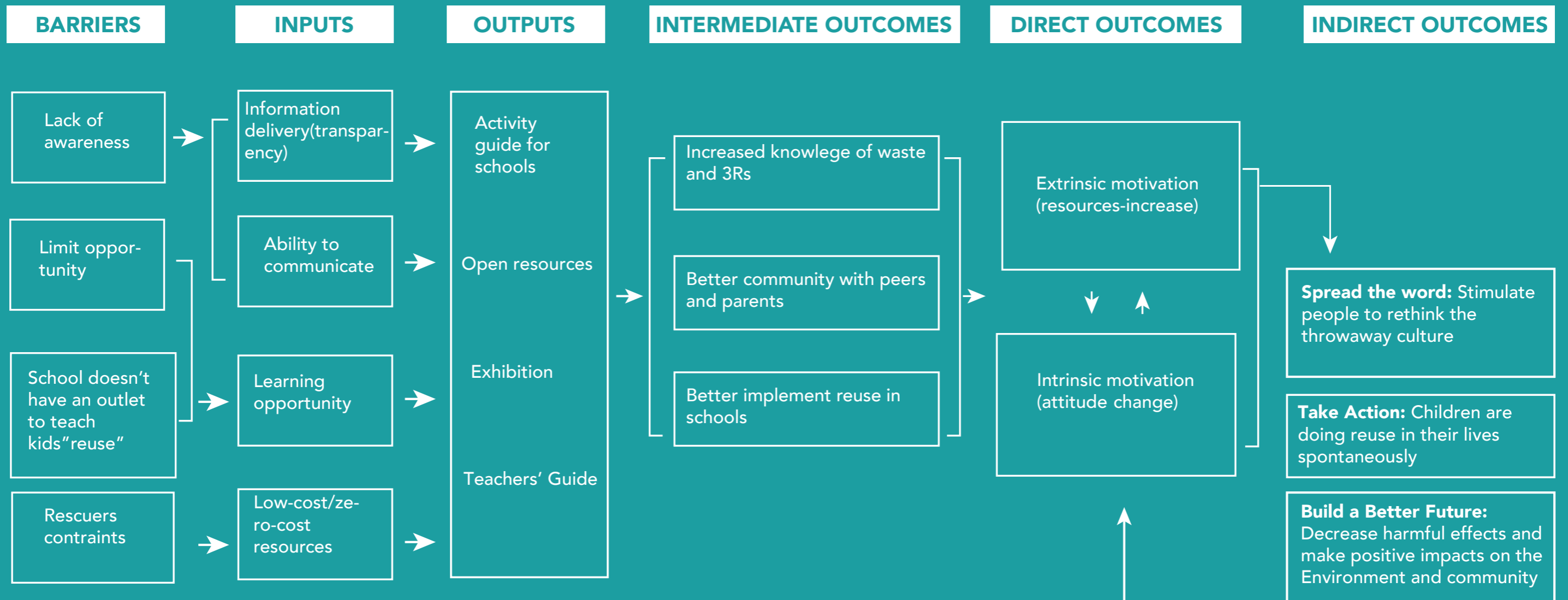
In this week, children will bring the materials they hunted to the class. We will have children separate their findings into the proper receptacle: Reusing vs. Trash. After that, children will be asked to take a look of the materials in the reuse bin to see how much valuable material was diverted from the landfill and how much trash they've saved from harming our environment.



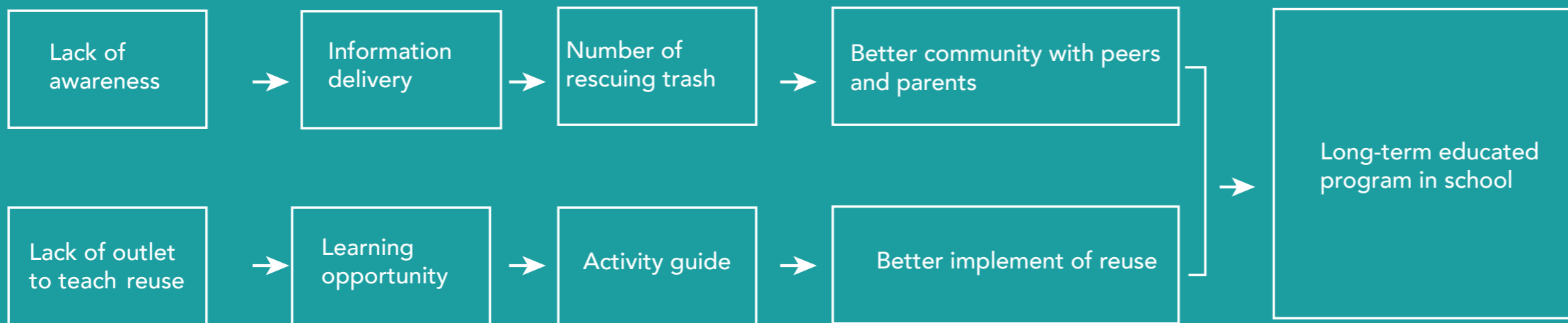
**IMPACT**

05

# THEORY OF CHANGE



## SYSTEM-LEVEL CHANGES



# LOG FRAME

INPUTS	ACTIVITIES/ PROCESS	OUTPUTS	OUTCOMES	GOALS
<p>A curriculum that focuses on cultivating children's environmental awareness and actionable decisions.</p>	<p>Introducing 3Rs and providing children the hand-on experience</p>	<p>Children increasing awareness of environment and the positive impacts of their decisions</p>	<ul style="list-style-type: none"> <li>- A holistic understanding of systems' needs and schools' barriers</li> <li>- Uncover the opportunities for our interventions implementation</li> <li>- Children feel empowered and motivated</li> <li>- responsibility for environment</li> </ul>	<ul style="list-style-type: none"> <li>- Long-term program in schools</li> <li>- positive impacts towards a better environment and community</li> </ul>
<p><b>People, Community</b>            -Children            -Instructor(teachers, parents)            -NYC schools</p> <p><b>Materials, Resources</b>            -curriculum            -Activity's space            -Instructions</p>	<p><b>Research</b>            -Interviews            -Surveys            -Secondary online research</p> <p><b>Development</b>            -Initial concept for content and functionality            -prototyping workshops            -reframe activities based on feedback</p> <p><b>Educational Content</b>            -educational resources for download</p> <p><b>Branding</b>            -naming            -logo            -branding concept</p>	<p><b>Research</b>            -listing barriers for children engagement            -listing the needs of schools            -studying example of curriculums            -listing the findings and insights about thesis problem            -an understanding of the waste system</p> <p><b>Concepting</b>            -listing the possible interventions</p> <p><b>Branding, Storytelling</b>            -Listing potential names            -Branding narrative and message strategy</p> <p><b>Pitch Materials</b>            -outreach plan            -timeline for intervention</p>		



## MEASUREMENT & EVALUATION

We collect the corresponding data on the Internet to facilitate confirmation of most views on the environmental impact of waste of resources, and to determine our stakeholder. Then we design and formulate an interview plan that has been adapted to our target group and prepare some questions to conduct further research on our target group. We collect first-hand data through interview video, on-site observation records, and questionnaire survey, and analyze and organize.

Additionally, the qualitative data is collected by the activities we did in the schools. Children's engagement and feedback from teachers and parents are one of the important parts to help us develop our project. By collaborating with schools, we are able to collect feedback to understand participants' reflections in the activities in order to enrich the curriculum.



## COVID-19

### The Moment full of Uncertainty

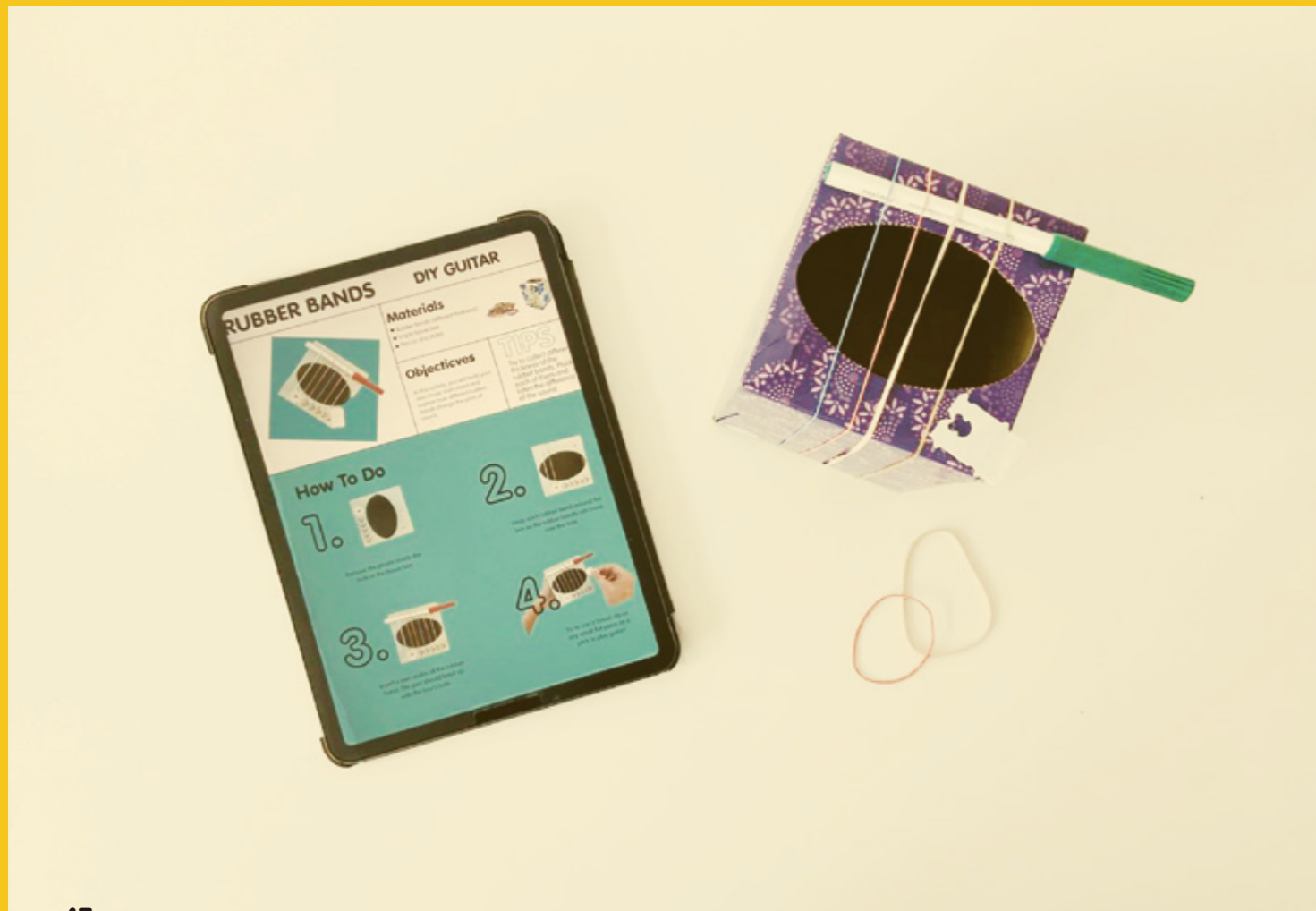
In 2020, Coronavirus spread across the world. Many organizations and families are directly affected by the crisis. Our thesis is also paused. During this challenging time, we kept thinking about how we can contribute to the community and support the people who are struggling.

Through the partnership with teachers, we heard that parents are overwhelmed and exhausted while children stay at home all day. Therefore, we decided to transform our activities into shared resources for parents to keep children inspired and engaged at home.

# Indoor Educational Program

This program includes a couple activities featuring different waste materials. This program aims to support parents to keep children learning and to celebrate sustainability while schools are closed.

We asked teachers to help us share it with parents and children. The most important reason we encourage play with repurposed materials is that it's inclusive; anyone, anywhere can take part. There's no need to buy anything special because all the materials are easy to find at home. We hope through the engagement of activities, we can inspire parents and children to think about what they can do with what they already have.





10 YEARS OLD KIDS



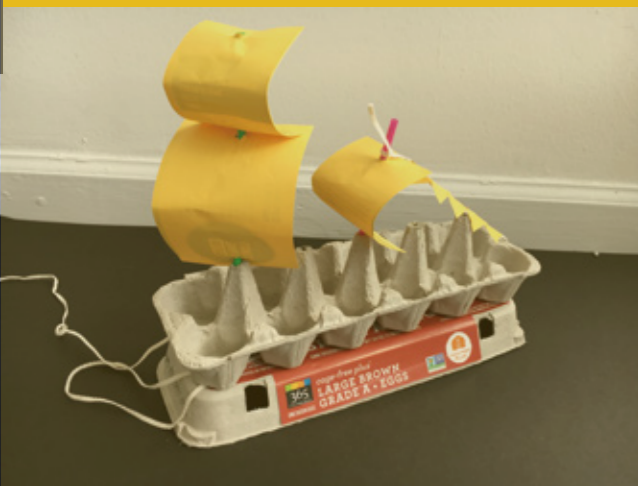
7 YEARS OLD KIDS



15 YEARS OLD KIDS



12 YEARS OLD KIDS



12 YEARS OLD KIDS



9 YEARS OLD KIDS



**“Your activities are always inspiring. I will definitely share it with parents”**

- Teacher, P.S. 030

**“The activities are very engaging. I will make sure to forward the activities to our staff. When things are normal again, I look forward to doing your activity at our school again!”**

- Teacher, P.S. 557

**“I love the idea of paper roll stamps! It’s really a fun way to reuse them.”**

- Mom

**“These are amazing ideas! My daughter and I were discussing about recycling recently. We look forward to trying some.”**

- Mom

## NEXT STEPS

Fighting with the waste crisis is a never-ending battle. In the future, we will keep enriching the educational resource while reaching out to more schools to implement the curriculum. No matter it's the curriculum for schools or the resources for parents, our mission is always clear:

Through a series of actionable activities to nurture lifelong environmental awareness and instill potential actions in today's child and tomorrow's leader

**WASTE** noun.

Materials that is <sup>potentially usable</sup> ~~not wanted~~; the ~~unusable~~ remains of somethings  
Valuable

Similar: **Resources** **Assets**

