

GUARDIANS OF THE OCEAN CLUB

KIDS SPEAKING OUT ABOUT
OCEAN-BOUND PLASTIC



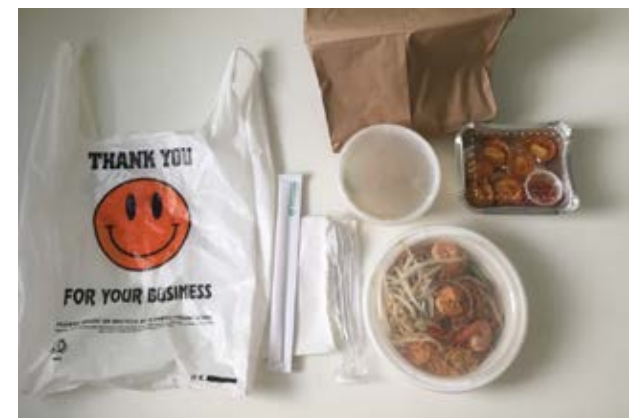
PARPPIM PIMMARATANA
Advised by Miya Osaki

INTRODUCTION

In Bangkok, flooding is a chronic problem. Underneath the effects of natural heavy rain is an overindulgence raised of plastic bags usage, combined with poor waste management and lack of recycling facilities. Plastic has become a significant scourge for the city's network of pumping stations. It is embarrassing to say but really, water cannot drain from street properly because all the trash is blocking the drainage.

Since I moved to New York, I used to eat a lot of takeout food and order food delivery because I didn't know how to cook. I was frustrated with the massive amount of trash I produced each meal. In Thai food culture, friends and family usually each in groups, sharing a large meal together. A typical meal, especially dinner, will have an appetizer, 2-3 entrees included one stir-fried dish, one soup dish, one vegetable dish or one protein and a side of rice. For this reason, most of Thai restaurants in New York offer lunch specials that contain 3 items. New York is a city of disposables. In just one lunch Pad Thai order, we use several disposable plastic piece. I came here to study design to solve a waste and overconsumption problem. I was passionate about reducing waste but realized that I am also culpable for producing so much waste every day. Hence, I started asking myself: How can I create an intervention to reduce plastic waste?

My intervention is an in school program that empowers kids to to speak about current plastic issue in the ocean, encourage to make their own solution regarding reducing their single-use plastic usage in order to save their beloved marine animals and influence adults to do the same.



SINGLE USE PLASTIC WASTE PROBLEM

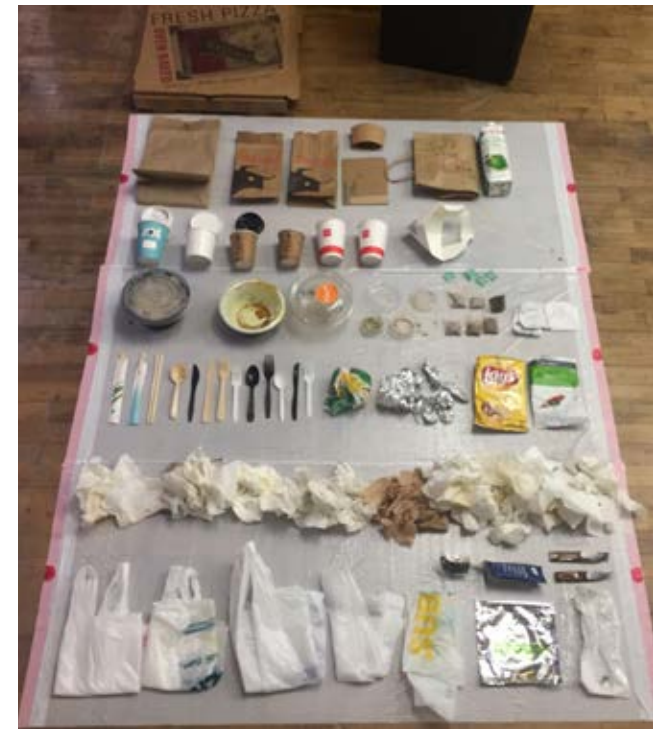
Nowadays, single-use plastic has become a part of our lifestyle. Mass production and advances in material science have produced inexpensive product that less expensive than replace or repair. Single-use plastic items make our life convenience, just use it and dump it away then we are done. But in reality, there is no away, trash goes to landfill and produce methane, one of the most potent contributors to global warming. The Ocean Conservancy's Trash Free Seas Alliance estimates that 8 million metric tons of plastic enters the ocean each year. Single-use plastic take up to 80% of trash in the ocean. Plastic is photodegradable, the chemical runoff and it break down to small piece in the ocean by sunlight. That plastics takes up to thousands of years to decay. As a result, fish and wildlife are becoming intoxicated. Consequently the toxins from the plastics have entered the food chain, threatening human health.

EVERY TIME WE EAT WE MAKE TRASH.

Together, food and packaging/containers account for almost 45% of the materials landfilled in the United States, and some of these discarded materials are food-related packaging and containers. In The United States produces 33% of the world's solid waste, with 4.6% of the global population. 43% of dumped or burned municipal discards, by weight, consists of food packaging and containers, or disposable products such as paper or plastic plates, cups, trash bags, plastic cutlery, tissue paper and towels. Thus, landfills are responsible for 36% of all methane emissions in the US. In addition, according to a recent study by Ocean Conservancy, take out food container, straw and plastic cutlery are the deadliest trash in the ocean.

New York City has a fast pace of life. Everything are disposable. New York take up to 41.4% of all food purchases are delivery which rank number one in US while the average country-wide is 12.6%. New York City residents produce 12,000 tons of waste every day. NYC's non-recyclable waste is sent to landfills in states like Pennsylvania, New York City residents currently recycle only about 17%

The problem seem small as a plastic spoon but it created massive effect to our environment.



* Trash audit at DSI



DESIGN JOURNEY

MY INNITIAL GOAL WAS TO
CREATE AN INTERVENTION
TO REDUCE PLASTIC
WASTE AROUND FOOD
CONSUMPTION, BUT
THERE IS NOTHING LINEAR
ABOUT DESIGN....



My project started with plastic trash produced by take-out eating habits, and food delivery. During the Summer, I worked on research and interviewing stakeholders including restaurant owners, students, office people, an environmental organization with work about environment and municipal recycling facilities.





RESTAURANT OWNER

“ PLASTIC CONTAINER ARE
5 TIMES CHEAPER THAN
COMPOSTABLE AND MORE
ACCESIBLE, IT DURABLE FOR
FOOD CONTAINED LIQUID. ”

- Noi, Go Go Thai restaurant



Interview objective:

Why they use and not use sustainable packaging?
What are the challenges using biodegradable packaging?
What is customer feedback?

I found that:

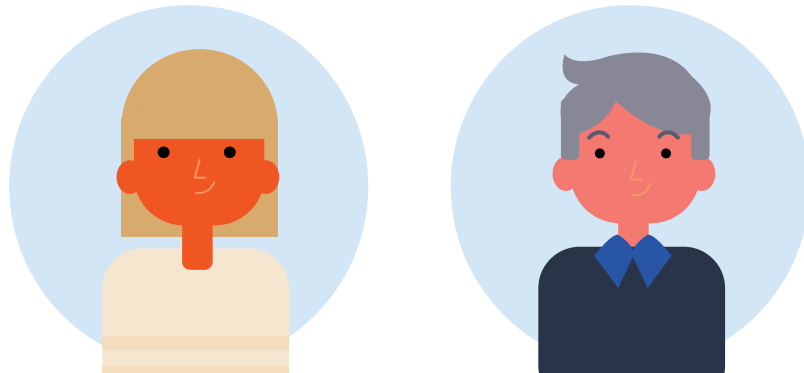
Cost challenges: Most restaurants consider plastic packaging the best option for their food. From business lens, they do care about cost. The plastic container is five times cheaper than a biodegradable options and more convenience in term of durability, cheaper, and easier to access. Some restaurant overcomes this challenge by increasing food price as a value-added.

Storage space challenge: Most of the restaurants has a limited storage space due to high rent in New York City and mostly have storage at basement. Biodegradable products are not resistant to high humidity.

Durability challenges: Most Thai foods contain soup or liquid. A biodegradable product would have absorbed that liquid during the time it takes to deliver the food to a customer. Besides, there are few shape options for biodegradable or alternative material regardless of plastic in the market which works for food liquid. The most popular choice is paper with wax. Even though it looks like paper but it is actually considered as plastic because it waxed.

Insight:

- Restaurant need to keep costs low
- Food policy are big challenge of bringing reusable items
- They believe that plastic packaging and utensils is good service that they can provide for their customer



EMPLOYEE: WAITER, WAITRESS, DELIVERY MAN

“ I NEVER UNDERSTAND WHY WE HAVE TO PUT A PLASTIC BAG TO COVER A BROWN BAG. IT’S A DOUBLE TASK. BUT I’M AN EMPLOYEE I HAVE TO DO WHAT THE OWNER WANTS”

- Lew, Sabuy Thai reataurant

Interview objective:

What is their role and relationship with plastic packaging?

How can they change the system?

Employee is the person who is most involved with plastic. It is the people who pack and go. There more layer of plastic packaging, the more work load.

I found that:

No accountable for making change: They are willing to do but they lack of information and are scared to make a change because they believe they don’t have an authority.

Work hirachy: There is also the lack of a communication with employer.

No incentive of saving cost: They could not see any benefit for them to take any responsibility on plastic reduction.



The practicality of take-out food and restaurant need to keep costs low. And Food Policy It would be difficult to tackle restaurant behaviours, so this lead me to the focused on a CUSTOMER



" I WORK NEAR HERE AND I LOVE THE FOOD HERE. I DON'T HAVE A SINK TO WASH MY CONTAINER SO I JUST COME HERE TO GRAB IT EVERYDAY. IT IS EASIER FOR ME"

- Joe, Brooklyn

" FOR ME, I FEEL STRANGE TO EAT WITH PAPER. I PREFER GLASS FOR DINE IN."

- Gorge, Brooklyn

Interview objective:

What is customer feedback?

What is their most concern when we are ordering food? What is their relationship of plastic in their eating habit?

I found that:

1. They think it free, and it is a convenience.
2. There are no environmental options available.
3. The most neglected confusing items piece concerning for recycling is plastic cutlery.
4. Unclear signage and inconsistent information confuses people and make them less aware of their plastic usage
5. They believe that it could be recycled

6. Carrying their utensils is an inconvenience in term of washing
Current food sanitation policies discourages consumers from bringing a reusable container. (the bowl for serving customer need to be sanitized by a restaurant which approved from the Health Department and all the equipment which associate with food cannot touch any items from outside restaurant due to contamination concern)



Toward my reducing ocean-bound plastic goal. I pivoted my focus to increasing Recycle rate

RESEARCH 1 : SPOON BIN



HYPOTHESIS

If we have a clear signage which clarify what item should go to which bin, people will follow and separate correctly. Then, we could sort small plastic aka disposable cutlery out before they go to recycling facility and end up in the ocean.

ACTIVITY

Objective: To understand how different types of plastic are confused people. I Set up “ I don’t know” bin at a trash station between “Trash” bin and “Recycle” bin

After one hour, people seem more confused with the I Don’t Know bin. Then I change it to “Utensils bin”

RESULT

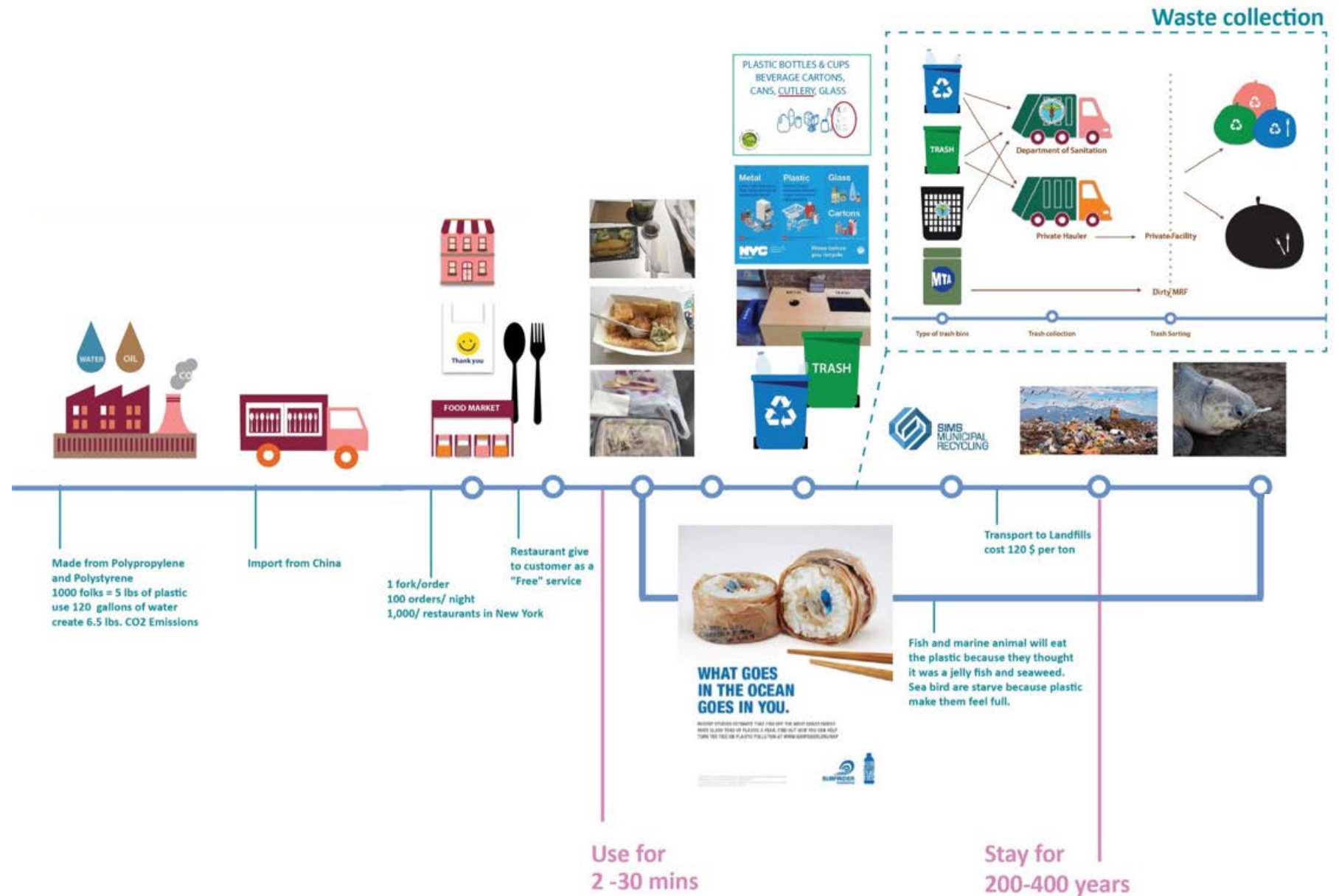
I got 410 spoons in 3 hours. By doing so, this trigger people to rethink that they want to continue using it for the next dish or toss it away. Three persons asked me why I did this and wanted to know if plastic cutlery was recyclable?

- Most people do separate out their utensils, but the unclear instruction confused them to do it precisely.
- The instruction could begin a discussion about separation as well as acknowledge people. They also are a reminder for people to rethink about their usage before they toss it. (A lot of people express sadness when their trash have to go to landfills bin)
- After collected used cutlery, it still a challenge of cleaning and hit the wall of repurposing these.

NOT EVERY TYPE
OF PLASTIC IS
RECYCLABLE. AND NOT
EVERY RECYCLABLE
PLASTIC ARE RECYCLE
BY THE MUNICIPLE
FACILITIES.



SPOON JOURNEY

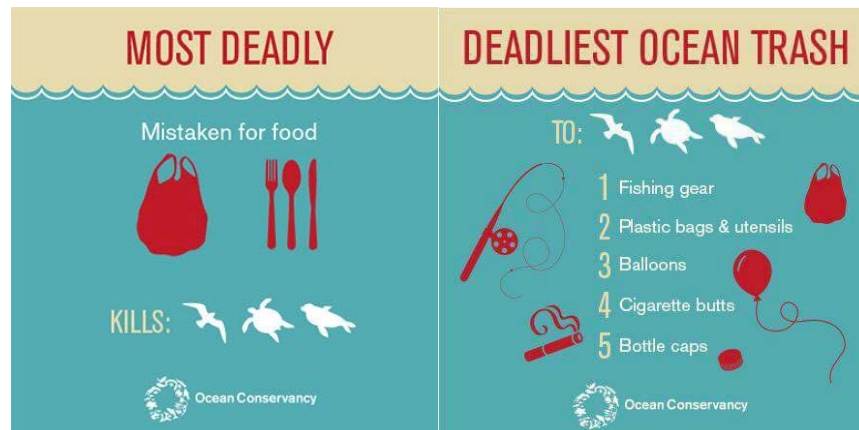


Toward my reducing ocean-bound plastic goal. I pivoted my focus to increasing Recycle rate. I interview Sims Municipal Facilities, New York's most prominent recycling facility, GrowNYC and research about universal recycling signage

I found that

- Due to different state laws and municipal facilities, different states require different recycling signages and instructions.
- There is a gap between private hauler and city hauler which operate differently, and this created inconsistent recycling instruction which leads to confusion for a citizen.
- By having this, it helps start a conversation as well as give information to people and at least remind them to rethink about their plastic usage
- There is also cleaning problem and what to do with the spoons we got.

Moreover, from the Ocean Conservancy organization's data, plastic cutlery is one of the deadliest plastic trash in the ocean. (along with plastic bags)



Sims Municipals Facility is New York City centered of sorting recyclable facility

"New York City has the largest municipal recycling program in the nation. We drop our used items on the curb and Department of Sanitation trucks pick them up, about 800 tons a day. Next, they're delivered to a company called SIMS, which has a long-term contract to process all of the city's metal, glass and plastic. At a SIMS yard in the Bronx, trucks from northern Manhattan and the Bronx roll up and unload"

"Small plastics are an issue for recyclers primarily due to their size. Below a certain size, it is difficult to densify (bale) loose plastics and no longer cost-effective to sort them for sale to plastics processors, considering their small volume. We expect small materials to fall through the 2.5" disc screens when glass is filtered out in our primary sorting process, and then remove the non-glass materials during our subsequent glass sorting process."

Small plastics like straws, utensils, and bottle caps are also very widespread components of litter and marine pollution, so I always suggest reducing their usage."

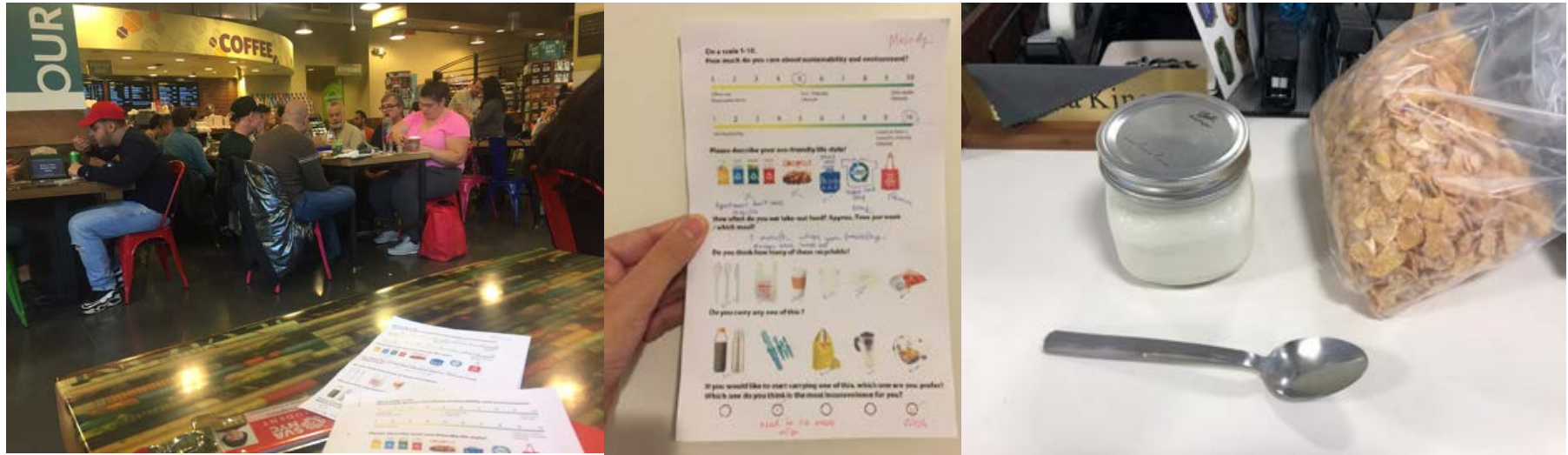
- Sam Siver, Sims Education outreach

MYTH ABOUT RECYCLE

SMALL PLASTIC ARE
NOT COST EFFECTIVE
FOR SALE TO PLASTICS
PROCESSORS. THEY
ARE SORT OUT AND GO
TO LANDFILLS.



RESEARCH 2 : CARRYING REUSEABLE ITEMS



I PIVOTED MY THESIS TO FOCUS ON “REDUCE”
I STARTED BY FINDING OUT WHAT IS THE INCENTIVE
AND MOTIVATION OF CARRYING REUSEABLE ITEMS.

HYPOTHESIS

Small plastic is easier to carry, if people carry water bottle it may be easier for people to start carrying small reusable items such as straw and cutlery. .

ACTIVITY

I was carrying my own spoon
Interviewed people who carry their own reusable items

I FOUND

Size doesn't matter: It's not about sizing even though straws are small, they are inconvenient because they require cleaning.

No economic incentive: Carrying reusable plastic utensils and straw is much different from carrying reusable bottle of water. For water bottle, it benefited individuals economically and in terms of health. It helped people save money from buying water bottle. Plus they can fill their bottle by tap water for free or filled with other drink of their desired choice. Carrying water bottle contributed to more convenience

Why we have to pay more when we could get it for free?: opposite with the water bottle, carrying straw and cutlery, creates inconvenience and cost.

EVEN THE PROBLEM
IS SEEM AS SMALL AS
A PLASTIC SPOON,
BUT THE INTERESTING
PROBLEM WAS THAT
EVEN THIS WAS TOO
BIG OF A BEHAVIOR
CHANGE.



CHILDREN POWER !!!

However, there is a light at the end of the tunnel. From observing Sims's education program, I discovered that ,as a group, children are very interested in a waste issue and energetic to take action toward waste reduction. They also have a potential and power to influence adults to change behavior !!!



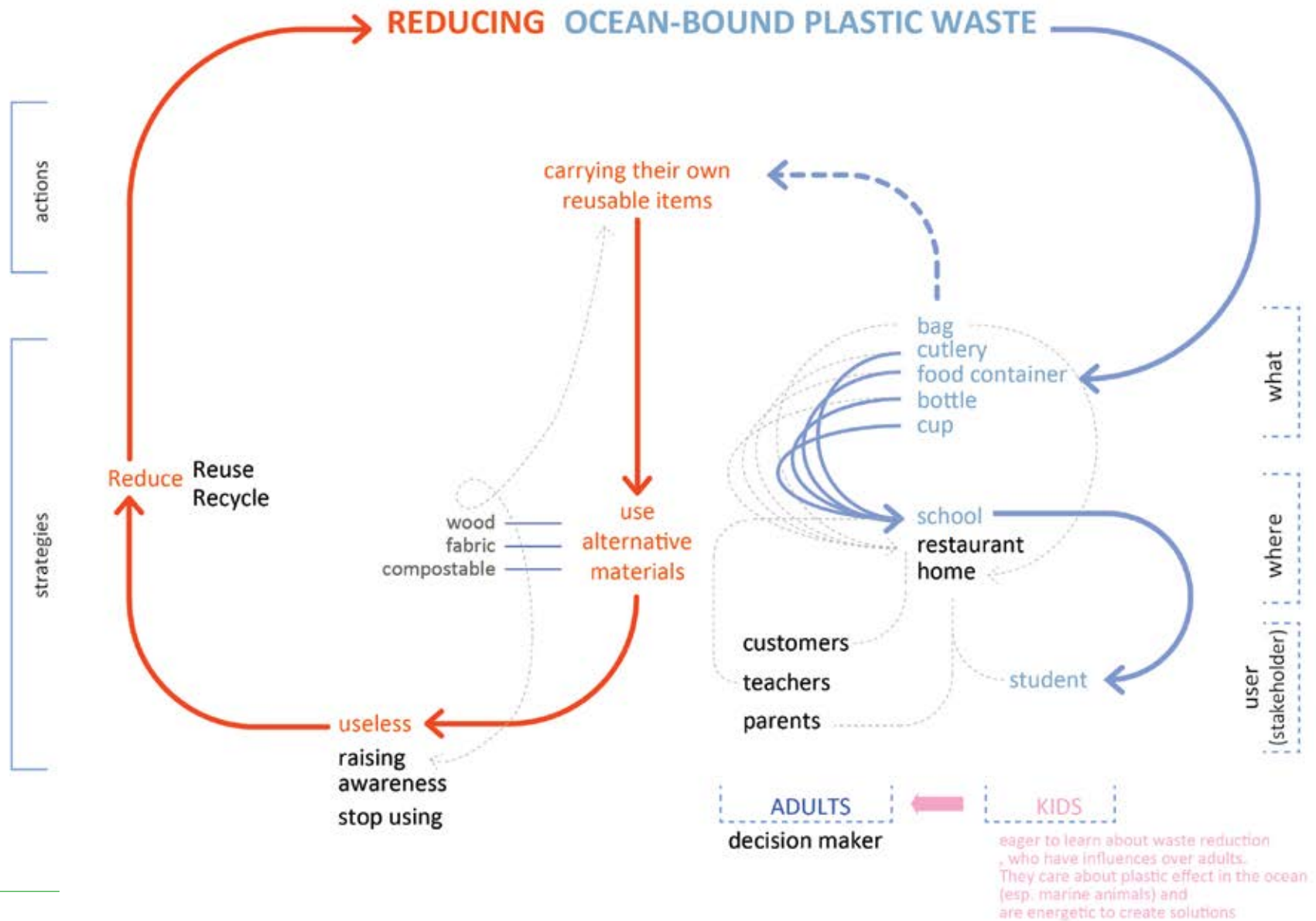
KIDS USE PLASTIC EVERY DAY
THAT ARE GIVEN TO THEM BY
ADULTS. THEY USE PLASTIC
AT SCHOOL, HOME AND
EVERYWHERE ELSE THEY GO
BUT IT IS NOT THEIR DECISION.

BY TARGETING KIDS, THIS WILL
LEVERAGE THEIR POWER OF
INFLUENCING ADULTS TO START
A NEW BEHAVIOR, CARRYING
REUSABLE ITEMS, WHICH IS A
BEGINNING STEP TO REDUCE
OCEAN-BOUND PLASTIC WASTE.

**HOW MIGHT WE
EMPOWER KIDS TO
SPEAK UP ABOUT
WHAT THEY CARE AND
MAKE THEIR OWN
DECISION OVER PLASTIC
CONSUMPTION?**



THEORY OF CHANGE



PROTOTYPE 1



“ What is the Brown bin?
I never know how to use
this before?”

- Lily, Thai teacher

“ I have a black bin for
recycle in my classroom”

- William

“ Which bin is
for my candy
wrapper?”- Julia

OBJECTIVE

Understanding kids basic knowledge about trash included recycle, trash and compost, what type of plastic involved in their routine.

ACTIVITY

A set of trash cards and trash bin image. Trash bingo sheet.

Playing trash bingo by asking student which trash they found in their life?

Separation game, kids were asked to toss the trash card in the bin.

RESULT

Kids very actively to answer the question.

Not only, kids but also teacher learn about trash management with this process.

INSIGHT

- Kids have basic knowledge about recycling, most kids recycle at school but their bin colors are different.
- Kids know about recycling but don't know what will happen with their trash after they toss it.
- Kids do recycle just following the school rules this could not motivate kids to keep the action consistency or do it at home.
- Kids age 6-10-year-old have a different learning ability.

PROTOTYPE 2



OBJECTIVE

Finding kids motivation and incentive to reducing plastic usage.

HYPOTHESIS

Kids care about animals.

ACTIVITY

Scope down trash card contain only waste involved in eating habits. and separation in two bins , Recycle and Trash. Start by asking kids to sort out the cards and explained what happen with their trash after they toss it. Show them the picture of plastic trash end up in the ocean and harm marine animals.

RESULT

Kids are very shocked by the fact that marine animals hurt by plastic and want to help them. They actively come up with many interesting questions and solutions. They started sharing about what they learnt at school and what they read about plastic trash.

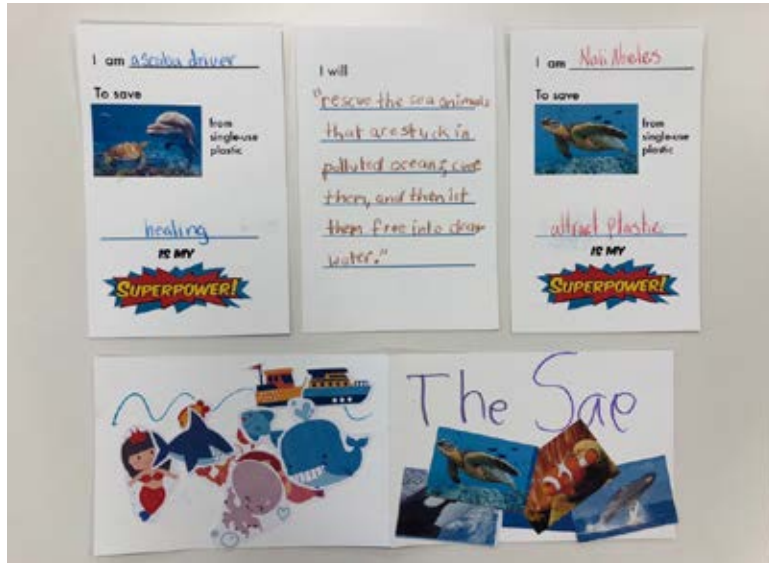
Taetae talked about burning waste to energy that he read from a magazine. Then, Nhuwan talked about how fish eat plastic and the cycle of toxic plastic return to our body by eating that fish.

INSIGHT

- Kids very interested in this topic and wanted to help marine animals.
- They are energized by given the opportunity to present their ideas to solve this problem.
- They still didn't know what action to take. It is hard for kids to connect the complex problem to their daily behavior and see how they could be a solution.
- Kids age 6-10-year-old have a different learning ability.

THEN, WE CAME UP WITH A CLUB
IDEA THAT AIMS TO RESCUE MARINE
ANIMALS FROM PLASTIC.

PROTOTYPE 3



OBJECTIVE

Pulling the problem closer and connecting the problem with the kids daily behavior.

Finding mechanism to help kids keep reducing plastic based on their own desire action toward reducing plastic goal.

ACTIVITY

Superpower card. Start with guide kids to think if they have a superpower then what the superpower they can use to save the marine animal. And create a promise to take action that they will keep doing after session toward protecting animals from plastic.

RESULT

Kids couldn't start to create a solution from scratch. They need a guide card to help them realize what they can do.

"I want to be myself to help the animals" - Nalie

Not only, kids but also teacher learn about trash management with this process.



INSIGHT

- 6-10 years old kid has different learning abilities, but they all love making art, drawing, and coloring.
- There always a story behind kids drawing that need to be heard. Kids love telling stories what they found, what they learn, what they met. They great storytellers !!
- Kids 10-year-olds are not interested in superpower concept. Different kids have a different idol, such as boy like a superhero but girls love princesses.
- Helping animals is a shared motivation for all ages and gender.

I am a scuba diver

To save



from
single-use
plastic

I will

reuse plastic
bags.



THERE ALWAYS A
STORY BEHIND KIDS
DRAWING THAT
NEED TO BE HEARD.
KIDS LOVE TELLING
STORIES WHAT THEY
FOUND, WHAT THEY
LEARN, WHAT THEY
MET. THEY ARE GREAT
STORYTELLERS !!

PROTOTYPE 4

OBJECTIVE

1. Help kids connect their daily habit with a plastic waste issue and see they impact ocean-bound plastic reduction.
2. Provide children with a communication tool to tell the plastic journey to the ocean to their parents.
3. Find a mechanism to help them continue reducing plastic activities. Create a support system to help them achieve their plastic reduction goal both at home and school.

ACTIVITY

Track what plastic they used in the last week on track cards. Then sum up to see how they could reducing plastic by just changing one behavior

Give kids a spoon journey tote bag for them to learn about a plastic journey to the ocean by coloring.

After coloring, they will pledge what the want to do to help their beloved marine animals and track the activities for the next week.

RESULT

Kids enjoy doing this activities. Younger kids were very shocked to learn about finding spoons in whales' stomachs. They started using tote bag after class.





GUARDIANS OF THE OCEAN CLUB

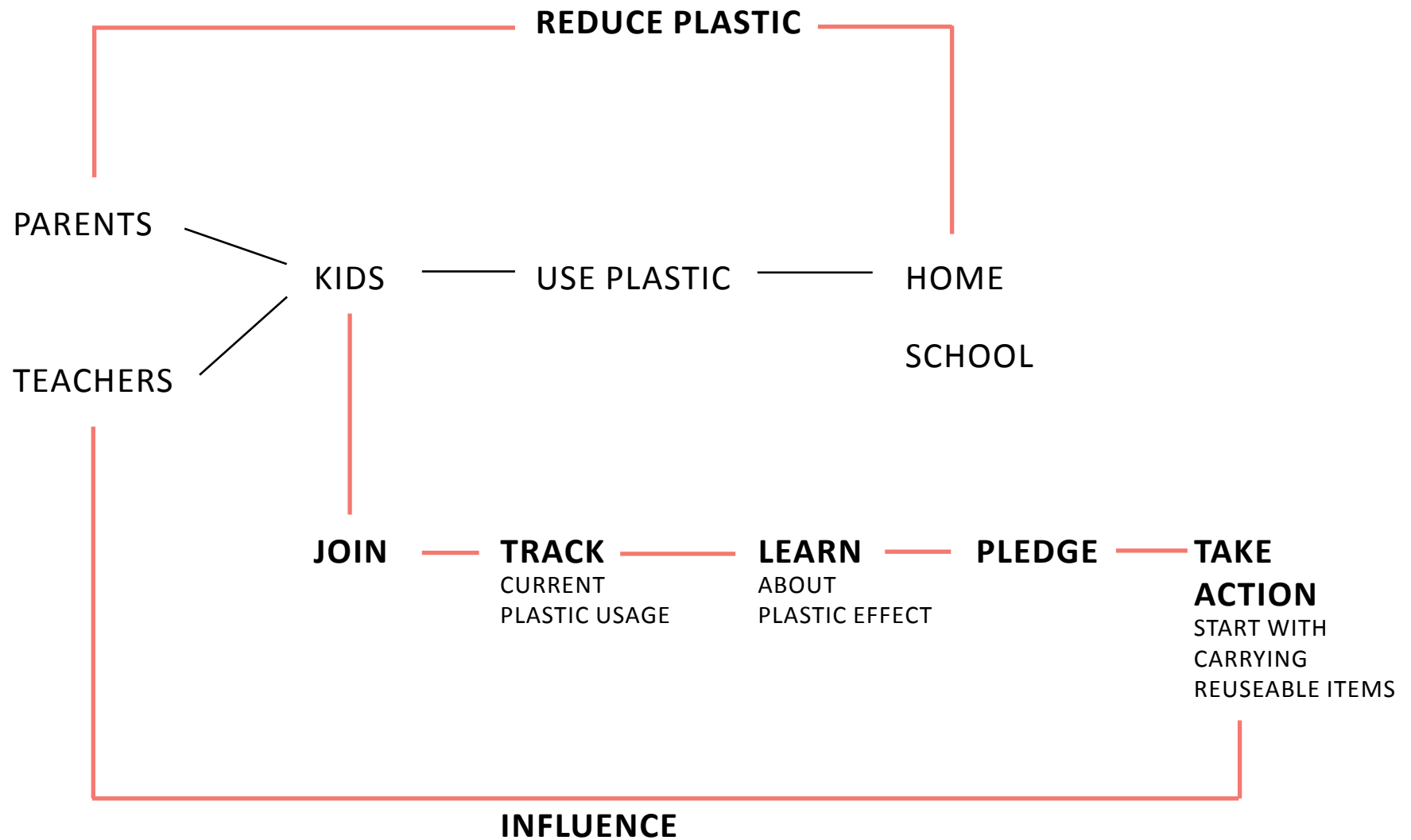
Guardians of the Ocean Club, an in-school program encourages kids 6-10 years old in NYC to speak out about their concern about plastic pollution in the ocean in their own voice and make their own decision toward reducing ocean-bound plastic to help their beloved marine animals. This program will empower kids to be an advocate about plastic waste issues and influence adults to do the same.

By joining the club, kids will track their plastic usage to see how much their action could create impact, then shift it to reducing plastic usage by making their own decision it could be as merely turning one behavior such as stop using plastic bottle by carrying a reusable water bottle to school.

To do so, Kid got a tote bag as a communication tool to explain the plastic waste scenario to parent and work together to help their kids archive their plastic reduction goal and use a tote bag at school as well.

The tote bag is a reminder for kids to bring their reusable items to school. Carrying reusable items is a beginning step to reduce plastic and shape a moral behavior for a trashless future.

INTERVENTION SYSTEM MAP



HOW TO BE A GUARDIAN OF THE OCEAN ?

JOIN

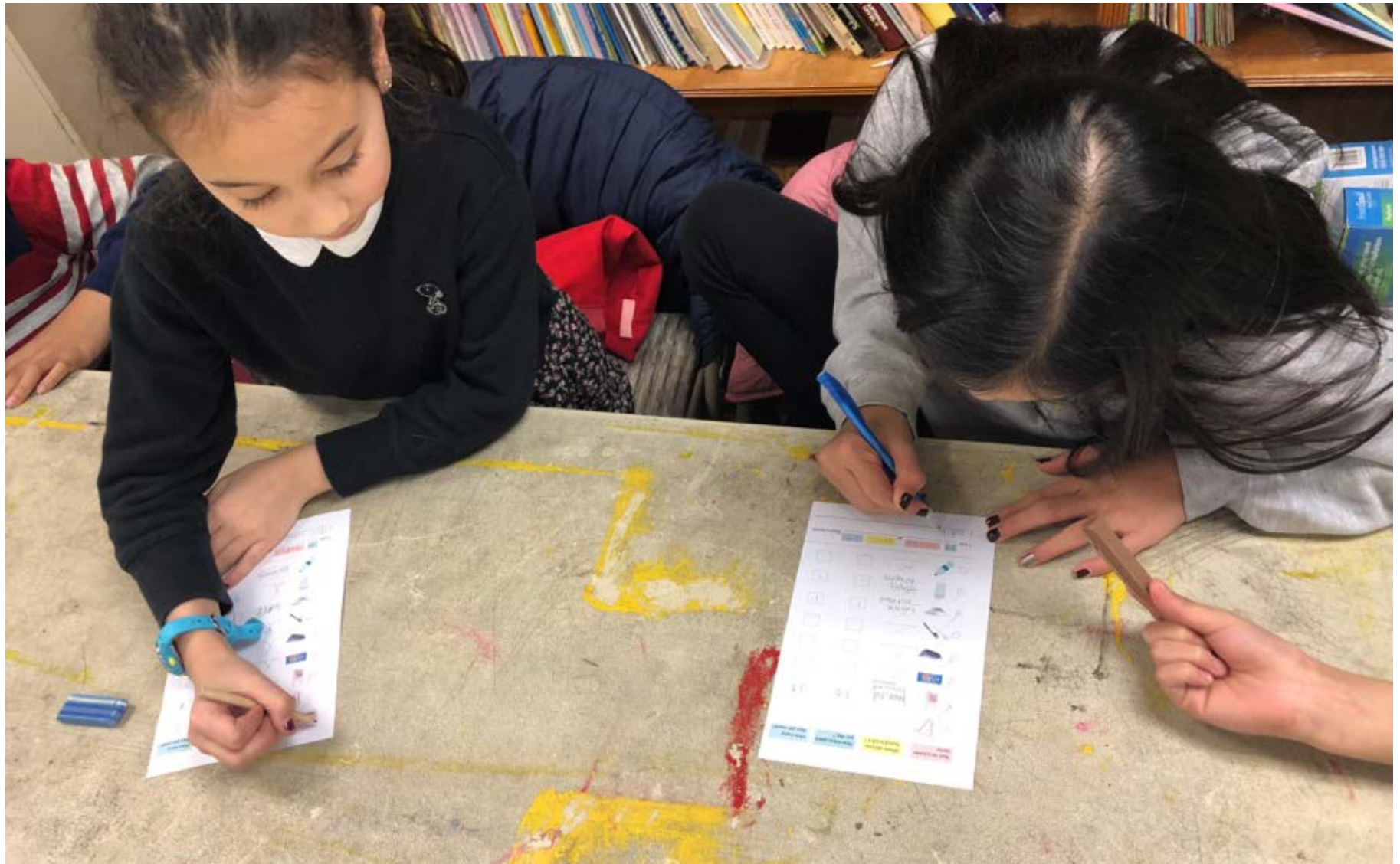
TRACK

LEARN

PLEDGE

TAKE ACTION

TELL OTHERS



JOIN

Non recycleble items	Where did you found/used it ?	How many piece per day ?	How many days per week?
<input checked="" type="checkbox"/>			
<input checked="" type="checkbox"/>	house, put Garbage and Groceries	2-5	2-5
<input checked="" type="checkbox"/>	X		
<input checked="" type="checkbox"/>	X		
<input checked="" type="checkbox"/>	X		
<input checked="" type="checkbox"/>	temple put food	1	1
<input checked="" type="checkbox"/>	temple put water	1	1
<input type="checkbox"/>	X		

I use 2-5 Plastic bags at home, 2-5 days a week.

I put trash and groceries

Non recycleble items	Where did you found/used it ?	How many piece per day ?	How many days per week?
<input checked="" type="checkbox"/>	Kitchen	1	7
<input checked="" type="checkbox"/>	Kitchen	1	1
<input checked="" type="checkbox"/>	Kitchen Garbage	2	3
<input checked="" type="checkbox"/>	Kitchen	1	1
<input checked="" type="checkbox"/>	at school	1	1
<input checked="" type="checkbox"/>	↓	1	1
<input checked="" type="checkbox"/>	↓	2	1
<input checked="" type="checkbox"/>	Restaurant	2	7
	(mine)	2	

I use 2 bottles at Restaurant, 7 days a week.

I drink it and recycle it

TRACK

Track card : Kids start tracking which plastic that they use in last week. Which type of single-use plastic item? Where they use it? How much they use? And How many days that use it per week?

Kids sum up to sentence

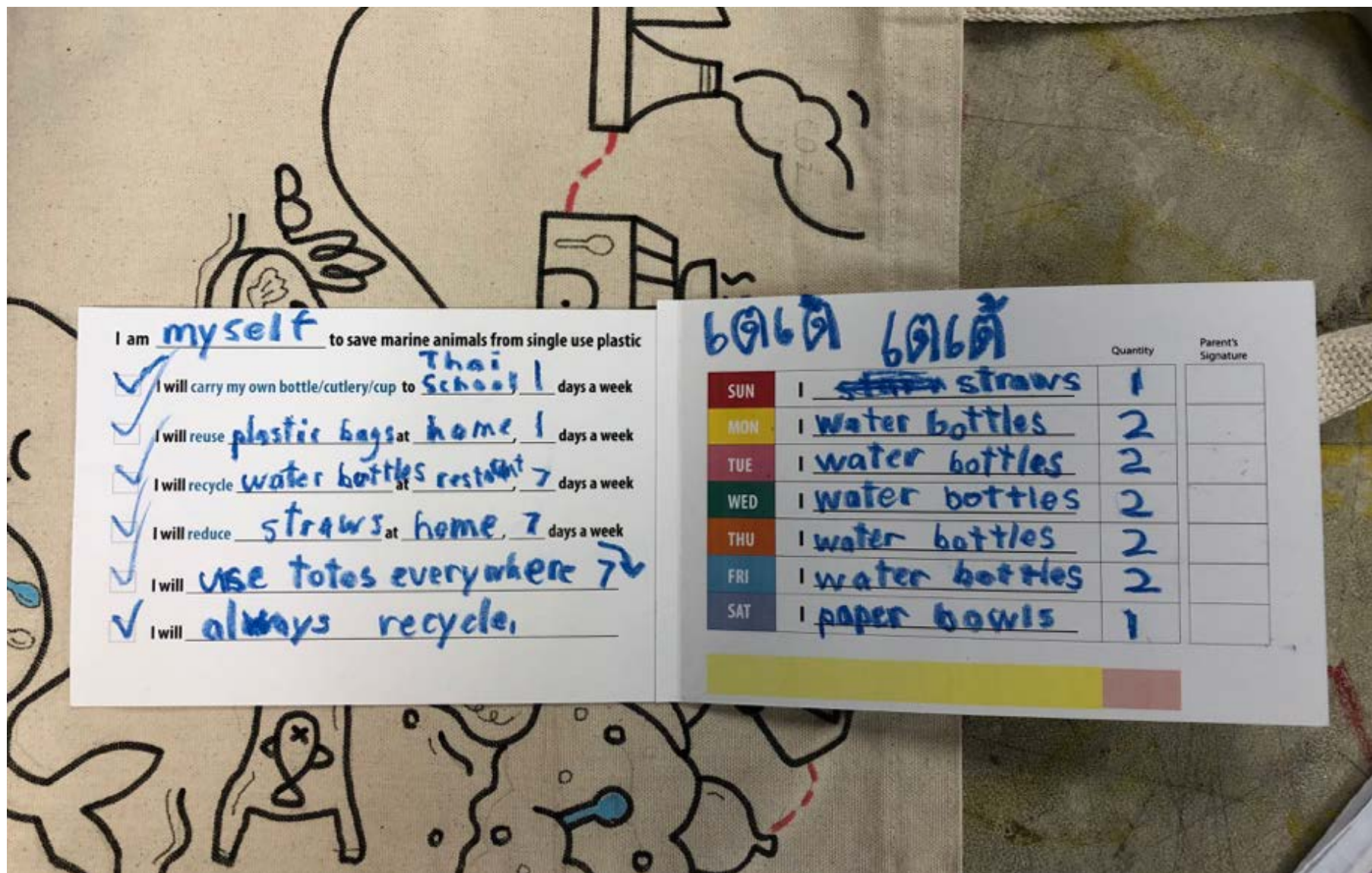
I use(x amount) of (plastic item) at (place) (x days) per week

Then they will see how much they created plastic trash and guide them how to reduce it.



LEARN

Learn about the current situation of plastic effect in the ocean by coloring an illustration of plastic spoon journey on the tote bag



PLEDGE

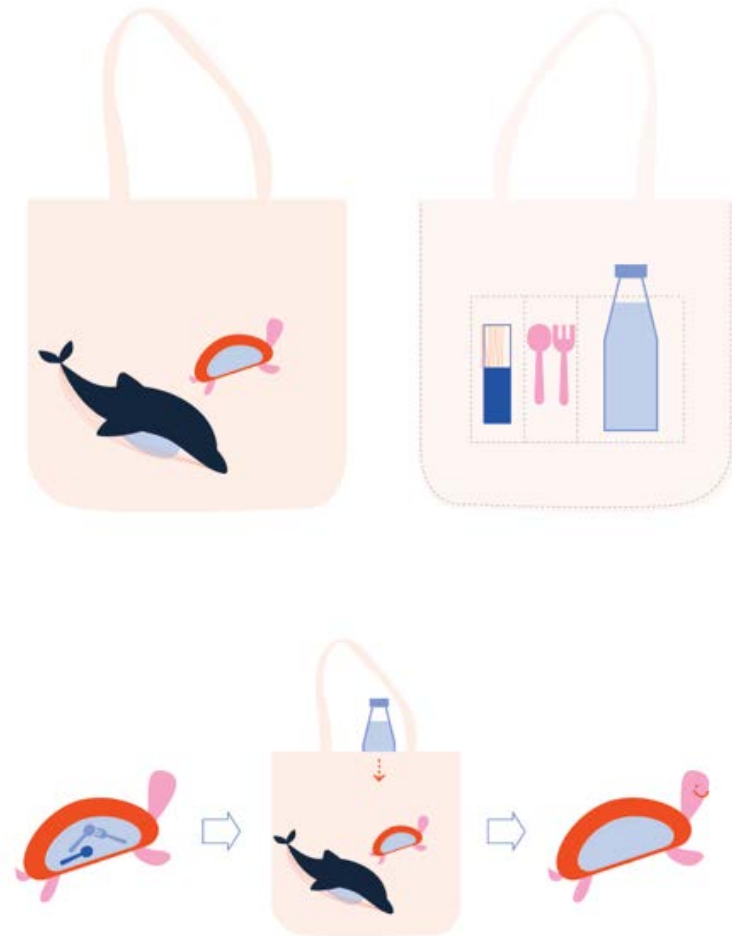
Sign pledge: After they learned about the plastic effect and concerned about it. They get back to see their plastic usage track and encourage to pledge to reduce plastic use



TAKE ACTIONS

Checklist pocket: They have to bring the bag to school and also the bag is a reminder for them to carry their own reusable. By helping kids not to forget, The bag has a special pocket for bottle, utensils, a box for them to fill out as a checklist.

Work with parent and School: Kids use a bag as a communication tool to talk with parent and bring the bag to school. At School, there will have a scoring point for kids who bring their own.





TELL OTHERS

Tote bag is a communication tool for kids to talk about plastic issue with parent. In order to influence adults, parent have to sign on kid's pledge card. This could start a conversation between parent and their children to act on reducing plastic consumption and help their kids achieved their reduction goal.

with this intervention

REDUCE

50 spoons per week

200 spoons per month

**1200 spoon per year /
1 Saturday school program**

**Expand to other
school in New York**

Brooklyn friends School
and other school in New
York.

THANK YOU

MY AMAZING THESIS ADVISORS,
MIYA OSAKI

MY DSI COHORT CLASS OF 2018

MY PARENTS, FAMILY AND FRIENDS

SAM SILVER, MICHEAL RIESER,
GAE SAVANNAH, KRU PEN

