

01

Speaker: Lulu Zhang



TEAM 98

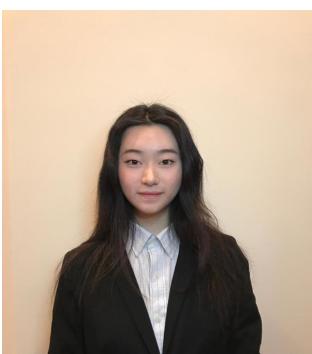
PROPOSED DESIGN

ON WASTE

MANAGEMENT

April, 2021

MEMBERS OF THE TEAM



02

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Lulu Zhang

Content Editor

- Introduce problem statement
- Summary and conclusion



Krishaj Rajbhandari

Format Editor

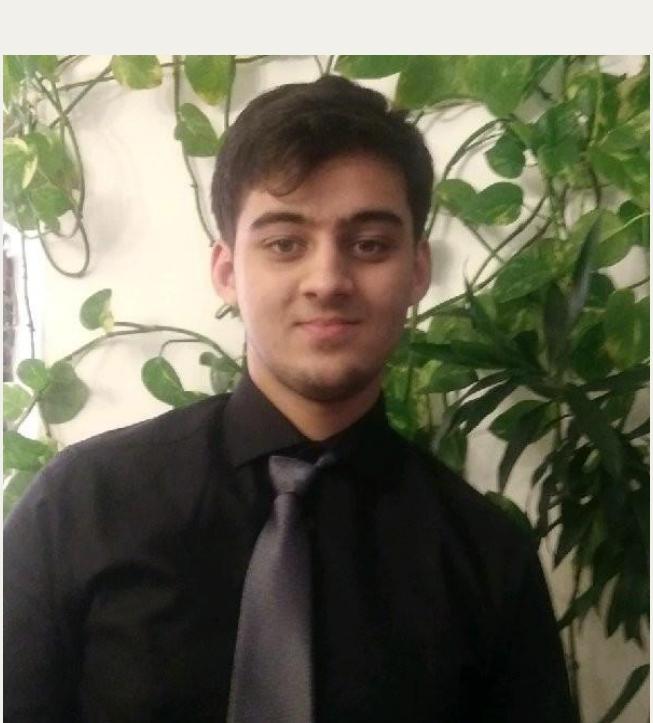
- Explain Project Requirements



William Park

Team Leader

- Explain Design Process



Abdullah Muhammad

Project Manager

- Explain Proposed Conceptual Design



Yifei Wang

Contact Person

- Explain Measures of Success

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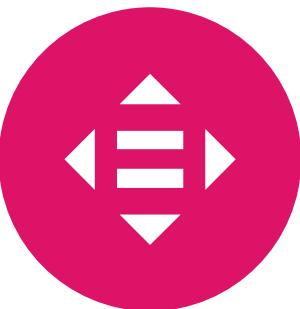


PROBLEM STATEMENT



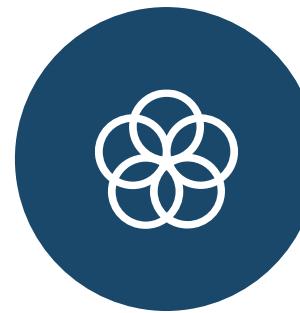
CLIENT NEED

- Maximize the number of residents that follow the waste management system
- minimize damages to garbage chutes in individual floors



GAP

Lack of guidance and information on the waste management system to residents



SCOPE

Improvement of the waste management system of a single condominium

PRESENTATION CONTENT

05

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Waste Management System Final Design

SECTION 1

PROJECT REQUIREMENTS

- The service environment for the design
- Major FOCs that impact the final design

SECTION 2

DESIGN GENERATION PROCESS

- What it is
- How it works

SECTION 3

PROPOSED CONCEPTUAL DESIGN

- The four components of the design

SECTION 4

MEASURES OF SUCCESS & CLIENT NEED

- Implementation of the design

Speaker: Krishaj Rajbandari



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SECTION 1

PROJECT REQUIREMENTS

01

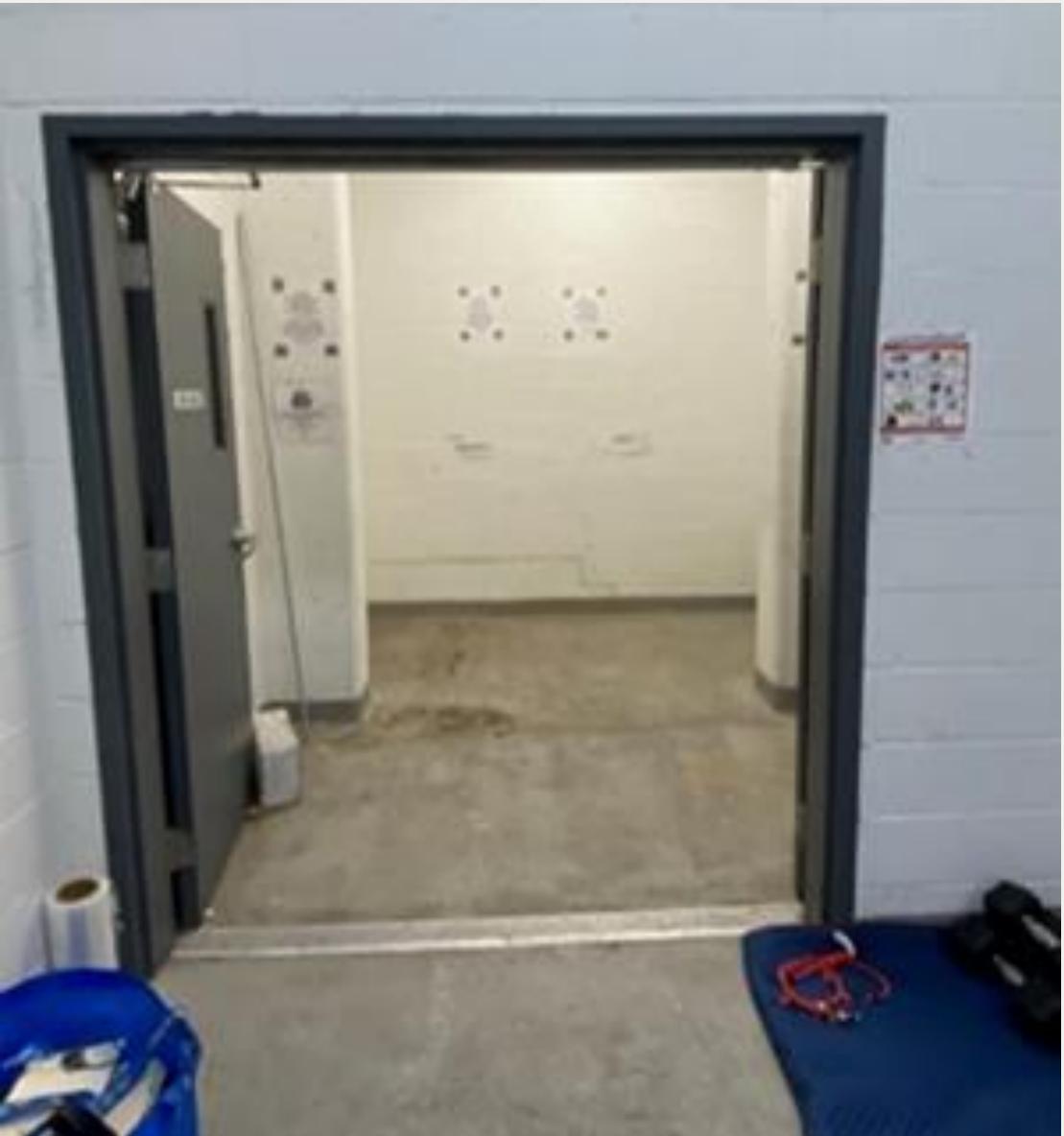


Figure 1: Recycling room for large recyclables.

Service Environment

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- Condominium is located at 170 Fort York Boulevard, Toronto, Ontario
- Recycling room and waste storage room on ground floor (figures 1 and 2)
- Waste chute rooms on all 29 floors of building (figures 3 and 4, next slide)

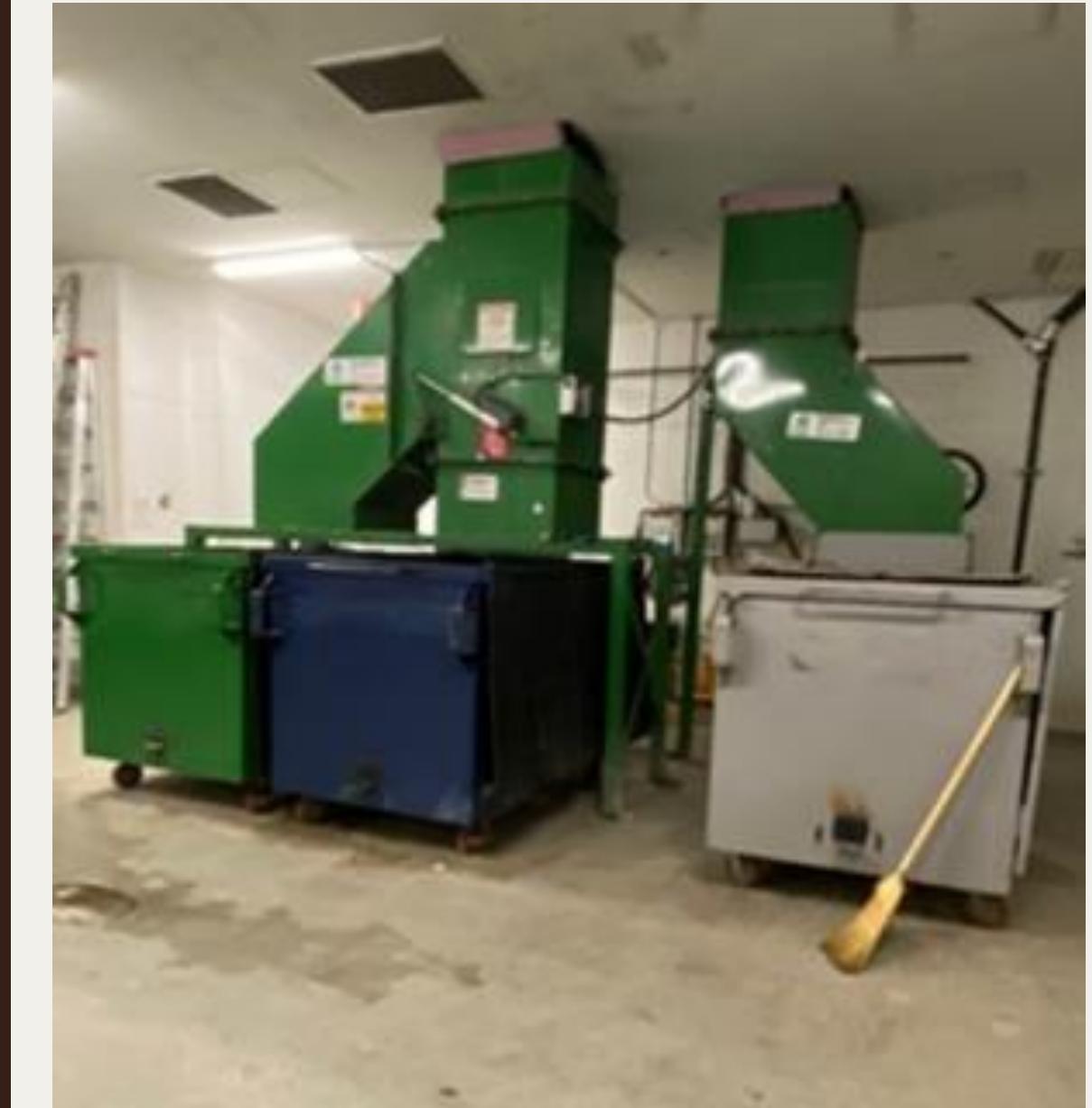


Figure 2: Garbage, recycling, and compost storage room.



Functions

Primary Function

- Increase the number of residents properly following the designated waste management system.

Secondary Functions

- Promoting and motivating residents to recycle.
- Informing residents on proper usage of the condominium waste system.



Figure 3: Recycling and compost chute in the chute room.



Figure 4: Garbage chute in the chute room



Objectives

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Objectives	Metrics	Goal	Rank
Effective	Percentage of tenants that properly waste manage.	Increase percentage of tenants properly waste managing from around 60% to above 90%	1
Low-cost	Measured in CAD.	Cost of the design should be approved by the Condo board.	2
Proper size	Measured in centimeters (cm)	Messages should be approximately letter size (8.5''x11'')	3
Simple	Number of users	No technical assistance required to be set up and so it can be individually.	4



Constraints

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Constraint	Limit/Metrics
Minimal garbage system failure	Waste chutes should experience a maximum amount of blockage or failure of 3 times per month
Manageable budget of implementation	The implementation of the final solution must not cost more than \$280 per floor
Compliant by the city rules, declaration, and by-laws	The design must adhere to the codes and standards of the Condominium Act 1998 by the Condominium Authority of Toronto (section 89 to 90 and section 136)

DESIGN PROCESS

PRESENTED BY WILLIAM
PARK



02



IDEA GENERATION PROCESS

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BRAINSTORMING METHOD

PROCESS:

- 20 minute rounds of brainstorming, 5 minute breaks with the whole team present
- A moderator, (Team Leader) led the exercise
- Ideas were documented on a team shared word document

RESULT: 62 Ideas

02

REMOVAL OF IDEAS

PROCESS:

- Removal of duplicate ideas & ideas not compliant with the constraints

RESULT: 42 Ideas



ALTERNATIVE DESIGN PROCESS

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PARK



01

MULTI-VOTING METHOD

PROCESS:

- First Round: Each team members receive three votes and will vote on the possible designs that can be solutions from the generated 42 ideas.
- Edited Version: Team will then remove idea(s) with less than 2 votes

RESULTS:

- First Round: 8 Ideas
- Edited Version: 7 Ideas



ALTERNATIVE DESIGN PROCESS

PRESENTED BY WILLIAM PARK



02

POINTS METHOD

PROCESS:

- Objective 1: Design Should Be Effective
- Objective 2: Design Should Be Low-cost
- Each team member gives each idea a score of 4,5,6 for objective 1, and a score of 1,2,3 for objective 2
- Scores are averaged out
- Top three highest scored ideas were selected as the three alternative designs
- Refer to chart below

Idea Number	Overall score for Objective 1 (points=4,5,6)	Overall score for Objective 2 (points=1,2,3)	Total
25*	5	1.5	6.5
24*	5	1	6
44*	4.5	1	5.5
22*	5	3	8
17*	3.5	2.75	6.25
42*	4.25	2.5	6.75
34*+18*	5.25	1.75	7



ALTERNATIVE DESIGNS

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PARK



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01

EMAILS & WELCOME KIT

02

STORAGE BINS

03

INSTRUCTIONAL MATERIAL & CONDO PROGRAM



SELECTING PROPOSED CONCEPTUAL DESIGN

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01

PUGH METHOD

-PROCESS:

Each alternative designs are given points (-1,0,+1) on its ability to achieve each objective

- Refer to table below

Solutions Objectives	Standard	Alternative design 1- 22	Alternative design 2 - 34+18	Alternative design 3- 42
Effective	S	+1	0	-1
Low-cost	S	-1	0	-1
Proper Size	S	0	0	0
Simple	S	0	-1	-1



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Abdullah Muhammad

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PROPOSED CONCEPTUAL DESIGN



03



Instructional Materials & Condo Programs

Component 1	Component 2	Component 3	Component 4
Chute Room Instructions	Residents Reporting System and Prizes	Landlord to Tenant	Informative Material Throughout Building



- Instructions
- Pictures
- Location
- Manufacturer (BrandLume Inc.)

Chute Room Instructions

01

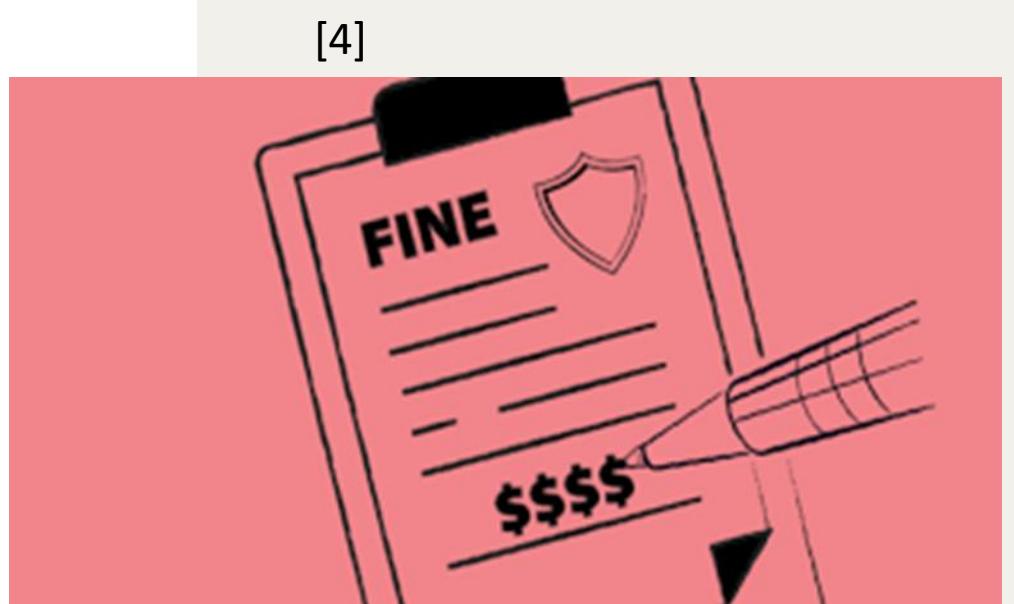


Figure 4.6 & 4.7
Simulation of the
posters on the
chute door and
chute room wall





Figure 5: The Library District Condo at 170 Fort York Blvd. [3]



[5]

Residents: Reporting System and Prizes

- Reporting Misuse of Chutes/Wrong Disposal methods
- Fines
- Gift Cards for good waste disposal



02



[6]

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Speaker:
Abdullah Muhammad



Landlord to Tenant

- Posters and Instructions given to landlords
- Information provided by landlords to all new tenants
- Reduces unawareness among new tenants

03



04

Informative Material Throughout Building

- Poster Boards
- Emails
- Elevator Monitors
- Digital Screens

Figure 6:
Message Board
in Mail Room



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Figure 7: Digital
Message Screens
on Elevators



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SECTION 4

MEASURES OF SUCCESS

04



WEEKLY PLANS

01
02
03

WEEK 1

Collecting data from survey our team member's family

WEEK 2

Collecting data from survey our team member's family

WEEK 3

Prototype our design based on the data we collected and our proposed conceptual design





WEEK ONE

58.3% of people prefer to have posters on the garbage room wall

“Tenant Engagement Guide” from the city of Toronto:
“use images, graphics and statistics to get the point across instead of heavy text.” [1]

What type of information you would like to choose to receive information about recycling waste?

23 responses

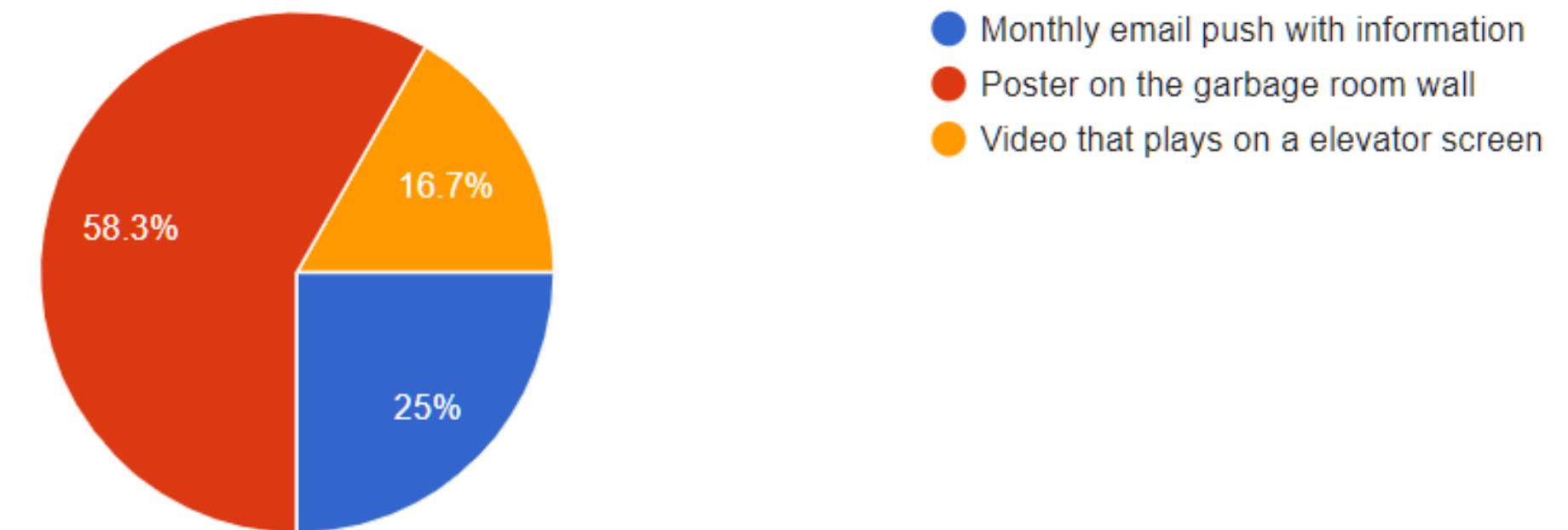


Figure 4.1 Survey result collecting from families around our team members.





WEEK TWO

From the data we collected from the survey, we decided to:

1. Use different color to indicate types of waste.
2. Include graphics to show different type of waste.
3. As mentioned in our client statement, we will include the usage of the chute.

What type of content would you want to see in a poster about recycling waste.

20 responses

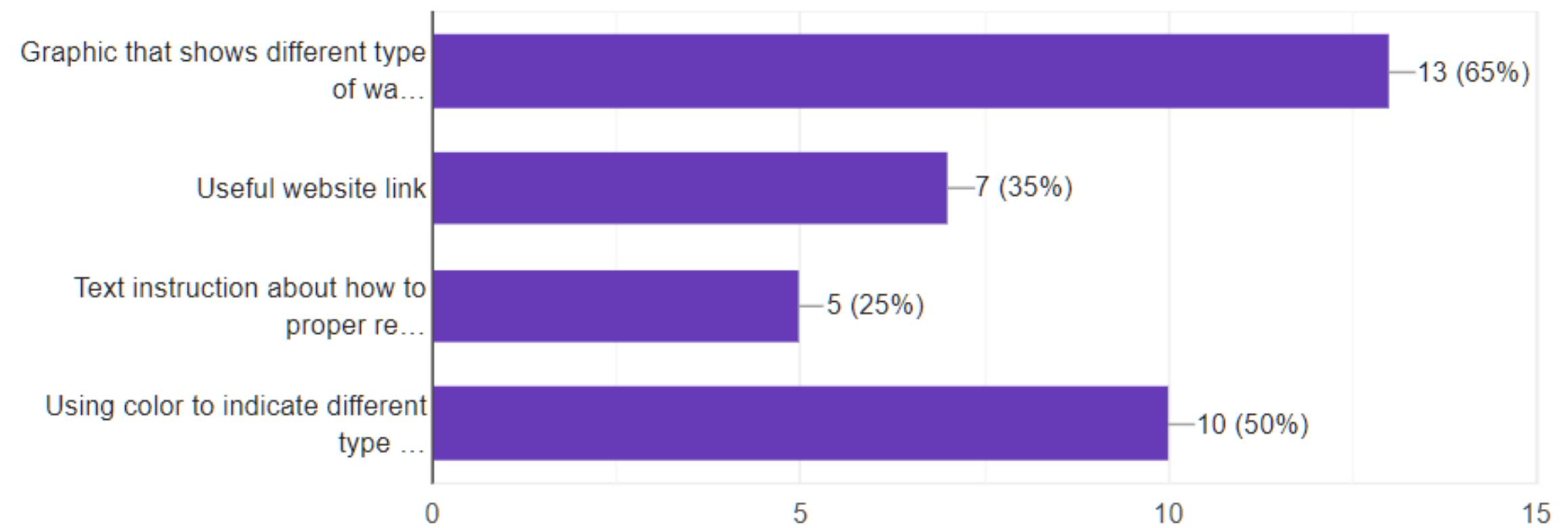


Figure 4.2 Result of the survey from 20 responses





WEEK THREE

From the data we collected from the survey, we decided to:

1. Include useful website

2. Some posters about the waste management

The email will send to the residents once a month.

What type of content would you want to see in a email about recycling waste.

20 responses

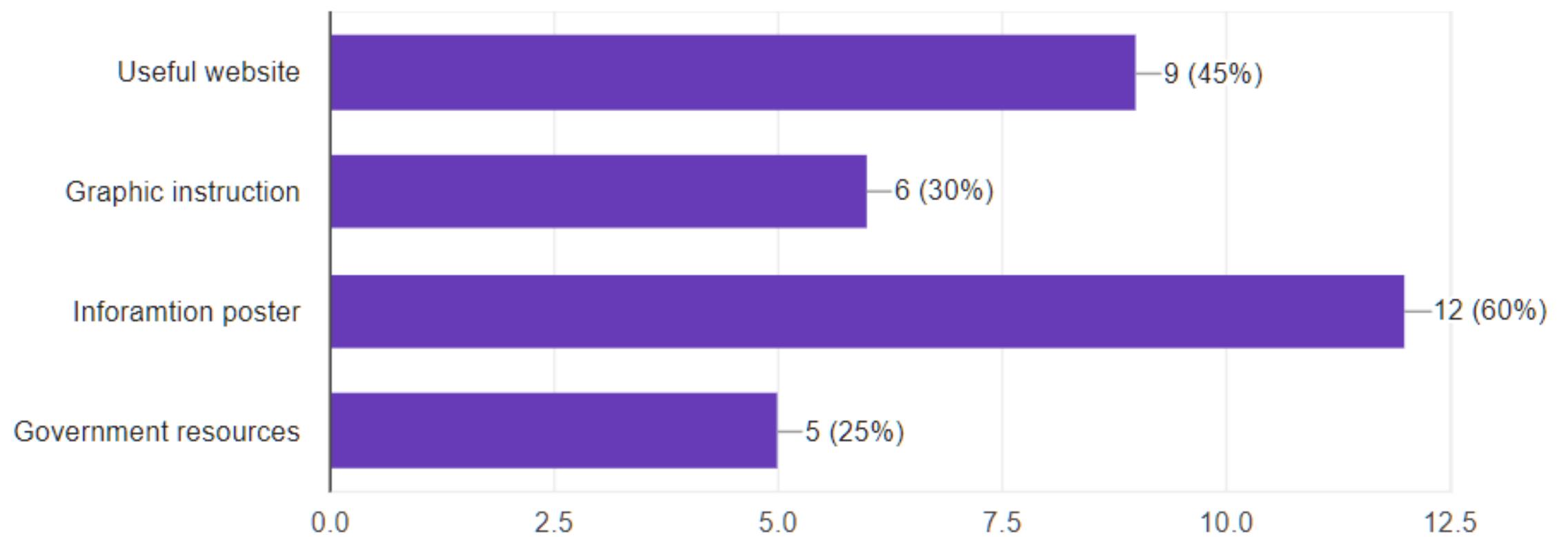


Figure 4.3 Result of the survey from 20 responses





PROTOTYPE

Based on the data collected, we prototyped

1. The posters on the garbage chute room wall.
2. The email sent to the residents.

Put Recycle and Organic here

For more information please check: <https://toronto.ca/recycle/> or call 311.
If someone is not recycling properly, please report to the condo manager immediately.

Glass bottle/jar (with lid on) 	Food, fruit, meat, egg, vegetable
Plastic bottle/jar (with lid on) 	Tea bag, coffee grounds, filter
Black/compostable plastic goes to garbage bin! 	House plant
Metal (Aluminum trays, pie plates, roasting pans) 	Diaper, pet waste, tissues, towel (not soiled with chemicals or make-up)
Paper (Newspaper, books, boxboard) 	
Foam Polystyrene 	

Select type of waste by push the button before throwing!

Figure 4.4 Poster about recycle and organic waste, design by Yifei





PROTOTYPE

Based on the data collected, we prototyped

1. The posters on the garbage chute room wall.
2. The email sent to the residents.



Figure 4.4 Poster that inform the residents about the size of the chute, design by Yifei



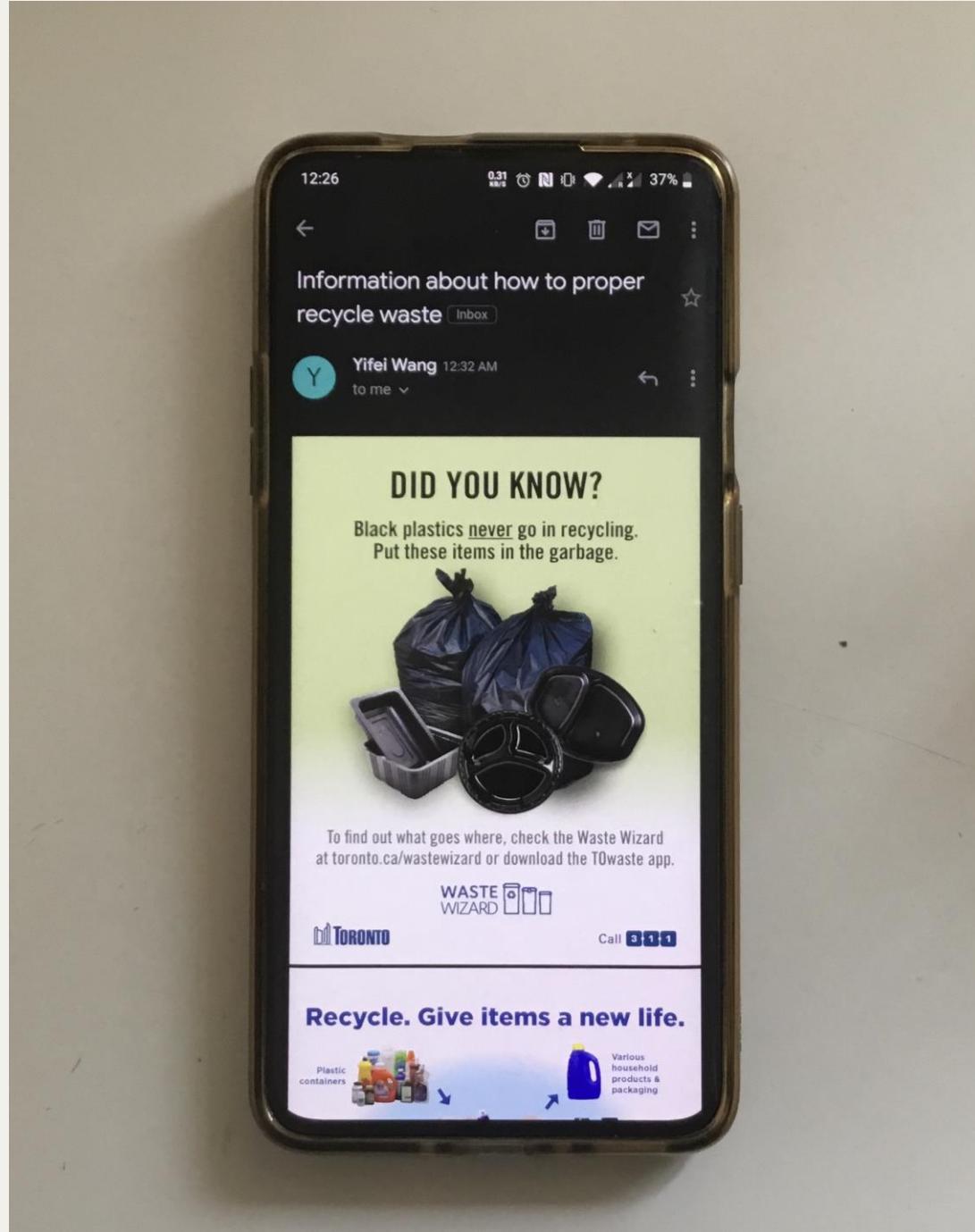


Figure 4.5 Email that read from a cell phone, source: The City of Toronto

Figure 4.6 & 4.7 what is looks like of the posters on the chute door and chute room wall





WASTE MANAGEMENT
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ANALYSIS OF MEETING CLIENT NEED

- How each components of the proposed conceptual design relate to the client need



HOW COMPONENTS RELATE

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- 01
- 02
- 03
- 04

CHUTE ROOM

- Adress the client need by providing guidance on the waste management system

RESIDENTS REPORTING SYSTEM AND PRIZES

- Create incentives and consequences to follow the system

LANDLORD TO TENANT

- Adress the problem statement regarding constant new tenants

MAIL ROOM, DIGITAL SCREEN< EMAILS< POSTER BOARDS

- To create constant reminders of the system and guidance to raise awareness

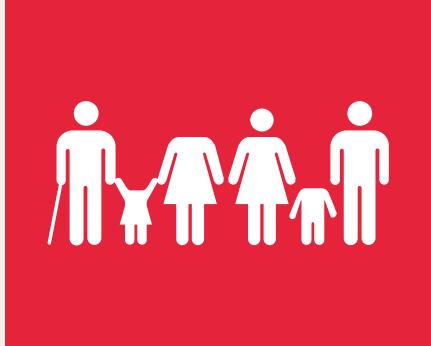


CONCLUSION



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01

PROJECT REQUIREMENTS

Define project scope, eliminate ideas based on constraints, decide on final design based on functions and objectives



02

DESIGN GENERATION PROCESS

Use of brainstorming, multi-voting, and Pugh's method to determine the final alternative designs



03

PROPOSED CONCEPTUAL DESIGN

Design tackles problem from four different components



04

MEASURES OF SUCCESS

Three-week plan on implementing the design



References

- [1] "Tenant Engagement Guide, Increasing Multi-Residential Waste Diversion," *The City of Toronto*, 2016, pp. 5-7. [Online]. Available: <https://www.toronto.ca/wp-content/uploads/2017/12/9364-Tenant-Engagement-Guide.pdf/>. [Accessed on: Apr-10-2021]
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THANK YOU

*Reach out to our Contant Person-Yifei Wang if
there are any questions.*

