Adapting the Future City Experience for Younger Learners (Grades 1–3)

The Future City Experience can be easily adapted for younger students by focusing on creativity, exploration, and confidence-building—rather than detailed outputs. At this age, the goal is not a polished final model, but helping students begin to think like problem-solvers.

1. Start with Ideas (Keep it Simple)

Begin with open-ended questions to spark curiosity:

- What do people need in a city?
- How can we help the Earth?

Encourage students to **draw, talk, and share** their ideas. There's no need for formal writing—verbal discussion and visual expression are more than enough at this stage.

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2. Build Confidence Through "Try-It" Activities

Before introducing the concept of a full city, give students time to explore building in a low-pressure way.

Simple challenges might include:

- Building the tallest tower (using blocks, cups, or straws)
- Creating a house (with LEGO or recycled materials)
- Designing something that moves (even very simple mechanisms)

This step is key—it helps students develop confidence, creativity, and a willingness to try.

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3. Create a Simple Class City

Once students are comfortable, bring everything together by building a **whole-class city model**.

You might include:

- A cardboard or paper base with roads drawn in
- Buildings made from boxes, cups, or LEGO
- Parks and green spaces using paper, clay, or found materials

Guide the activity with prompts like:

- Where do people live?
- Where do people play?
- How does your city help the Earth?

Tips for Success with Younger Students

- Keep activities short (30–45 minutes works well)
- Focus on discussion rather than writing
- Don't worry about perfection—process matters most
- Let students explain ideas in their own words

Success at this level sounds like students saying:

> "This helps people because…"
> "This helps the Earth because…"

Curriculum Connections

This approach integrates naturally into existing classroom learning:

- **Science:** materials, structures, and simple problem-solving
- **Language Arts:** speaking, listening, and sharing ideas
- **Social Studies:** understanding communities and how they function

It can be incorporated seamlessly without feeling like an "extra" activity.

Big Picture

For Grades 1–3, the Future City Experience is about:

- Exploring ideas
- Building confidence
- Developing early problem-solving skills

—not creating a highly detailed or polished final product.

Below, you'll find a real classroom example from a Grade 3 class, shared as **inspiration—not expectation**. As highlighted in their journey, the true value lies in the process: brainstorming, building, testing, and improving.

Our Future City Challenge Journey

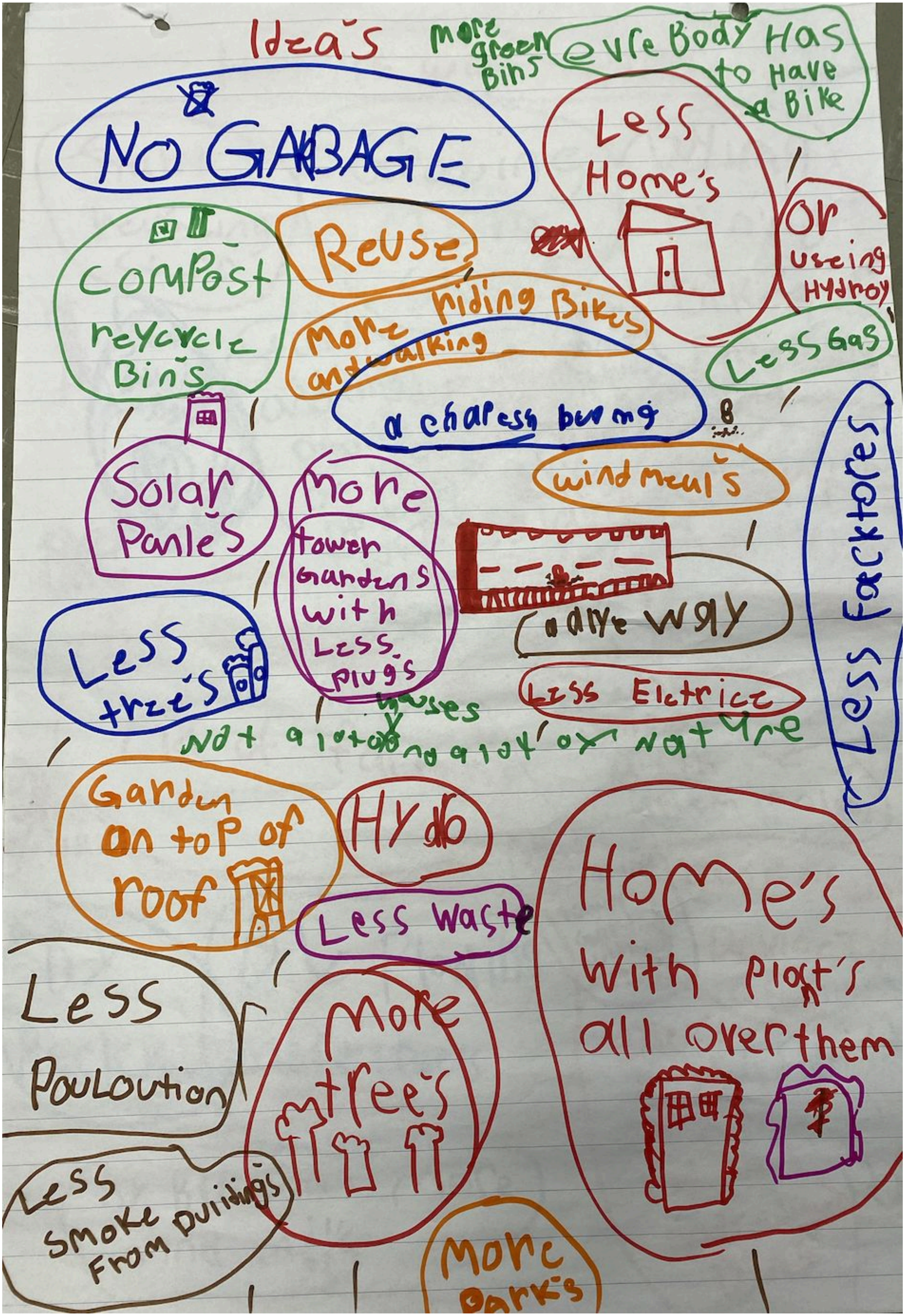
Robert Little PS
Acton, ON

Our Journey

- Engineer Meeting with the class
- Learning about:
  - Zero waste
  - Circular economy
  - Climate change
  - Design challenge questions
- Generating Ideas
- First drawing
- Electronic Layout Draft #1
- 3D Model Ideas
- Tower Building Activity
- Lego Structure Activity
- Straw Tower Activity
- Engineer Visit #2
- Updated Electronic Layout Draft #2
- Built our Model
- Moving Part
- Slideshow for the presentation

How it will HAPPen

- Start reuseing Stuff
- Growing More Stuff
- Buying More Bike's For People
- Start Buying Lesses
- Start adding Plant's on top of Houses when being Build
- don't Have Pollution
- Start ~~Buying~~ More Solar panles or Build ~~them~~ Houses with them inclued
- Start walking More
- By geting rid of factores
- ~~USY Less electRi~~
- Start inventing tower Gardens without Plug's
- Stop using Devices a lot
- By Reclcyeing
- By Planting more tree's
- every Body Get recicle and compost Bins
- Build more Park
- By Buliding more wind mills

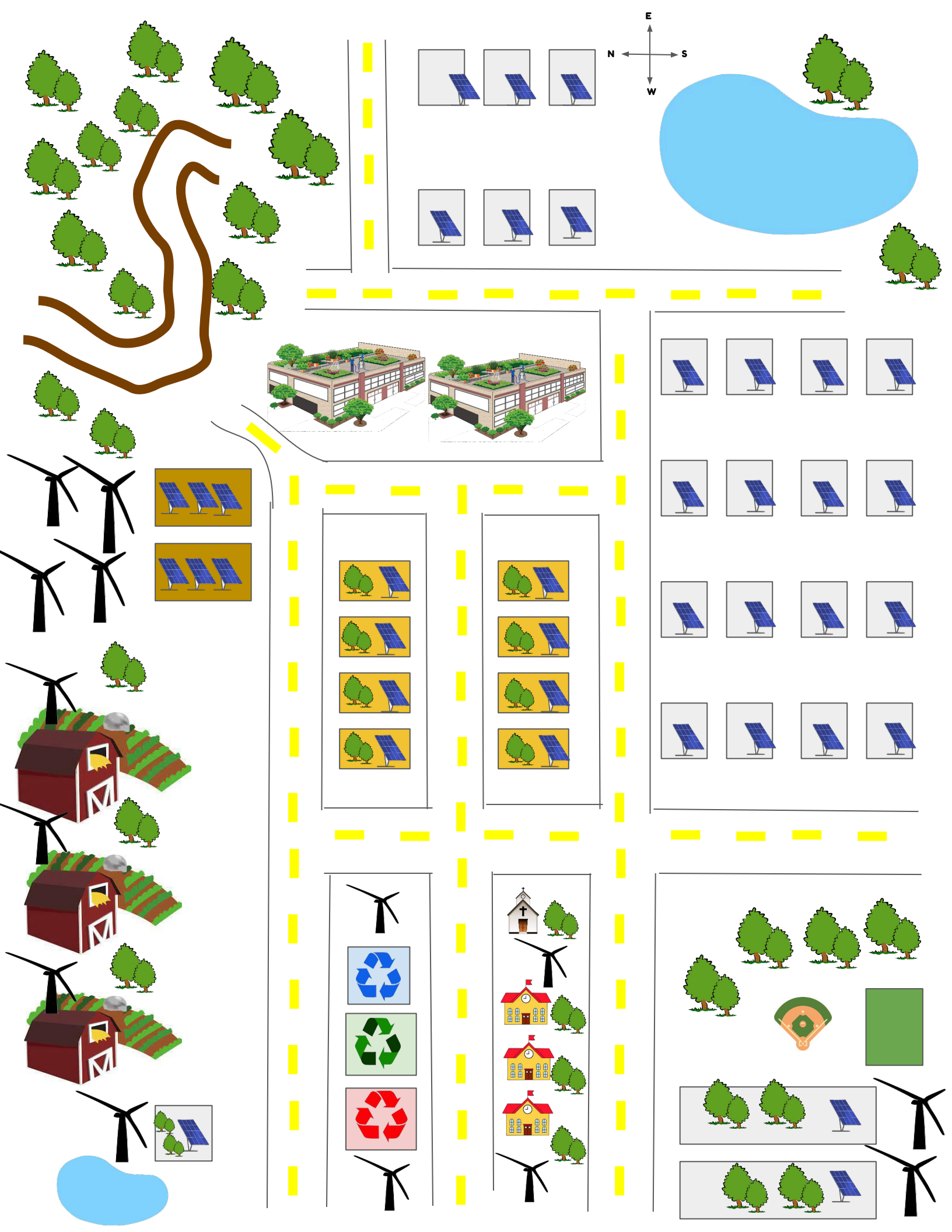

Idea's
more green Bins
evreBody Has to Have a Bike
NO GARBAGE
Less Home's
Or useing Hydroy
compost
reycycle Bin's
Reuse
More riding Bikes and walking
Less Gas
a charesh burng
windmeul's
Solar Panle's
More
tower Gardens with Less plugs
a drive way
Less Facktores
Less tree's
Less Elctrice
houses
Not a lot on a lot of nature
Garden On toP of roof
Hydro
Less waste
Home's with plant's all over them
Less PouLoution
More tree's
Less smoke from buildings
More Park's

Paper Draft #1

Future City Plans

- Future City - Farming city/town
- All buildings, residential and commercial are required to have and are built with solar panels, a garden wall, water barrel, compost bin
- Financial incentives for biking
- Cars only use biofuel or are electric
- Indoor compost and recycle bins have labels to indicate what can be put in each of them
- Financial incentives for home gardens outside and indoor hydroponic gardens

Electronic Layout Draft #1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S
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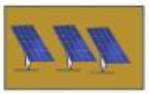
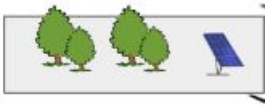
Future City Legend

Factory



Recreation



Emergency Services (Hospital, Fire, Ambulance, Doctors)

Stores/Restaurants

Water Treatment Plant

Residential Housing

Recycling Plant

Compost Plant

Clothing Recycle Plant

Church

Schools

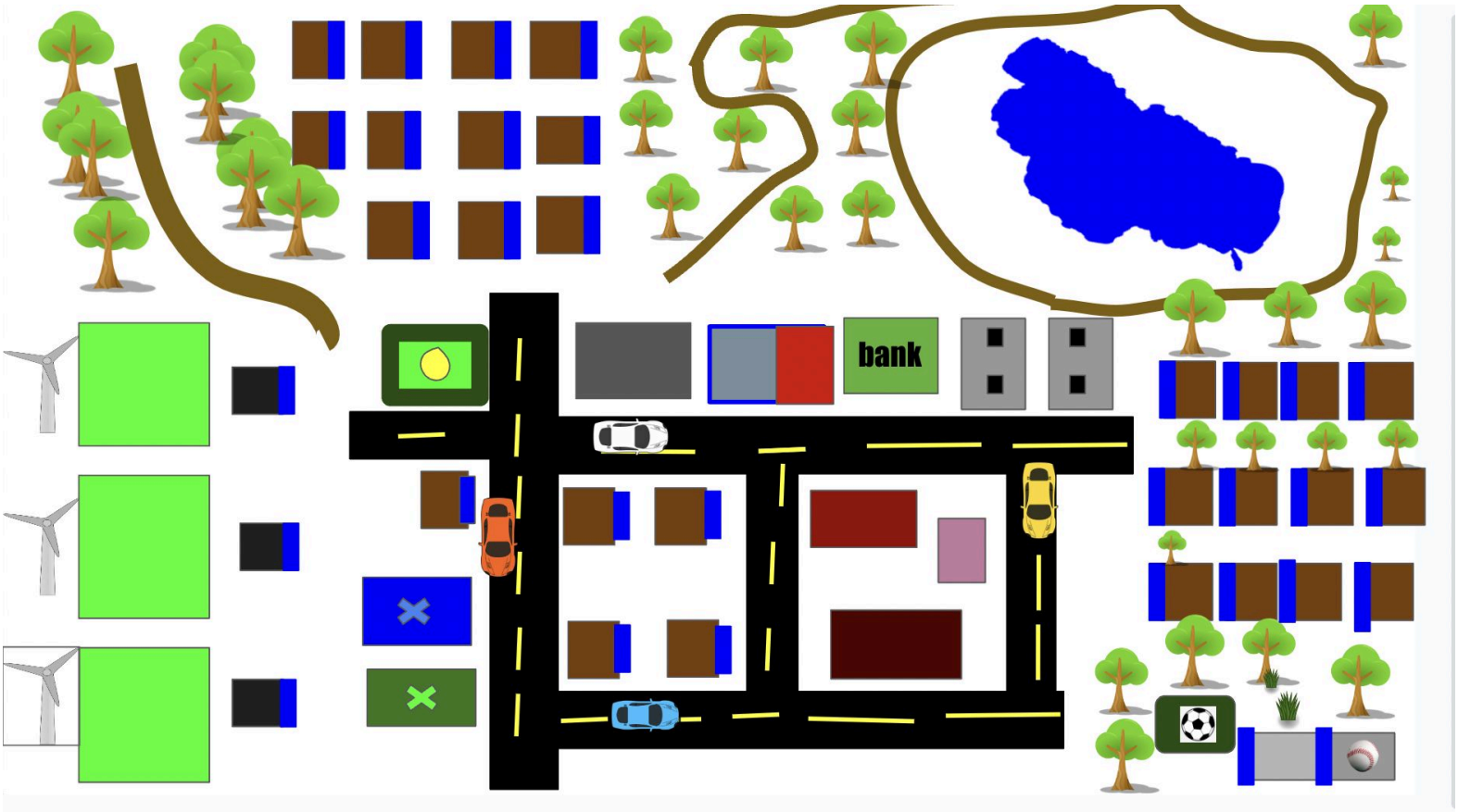
Solar Panels

Windmills

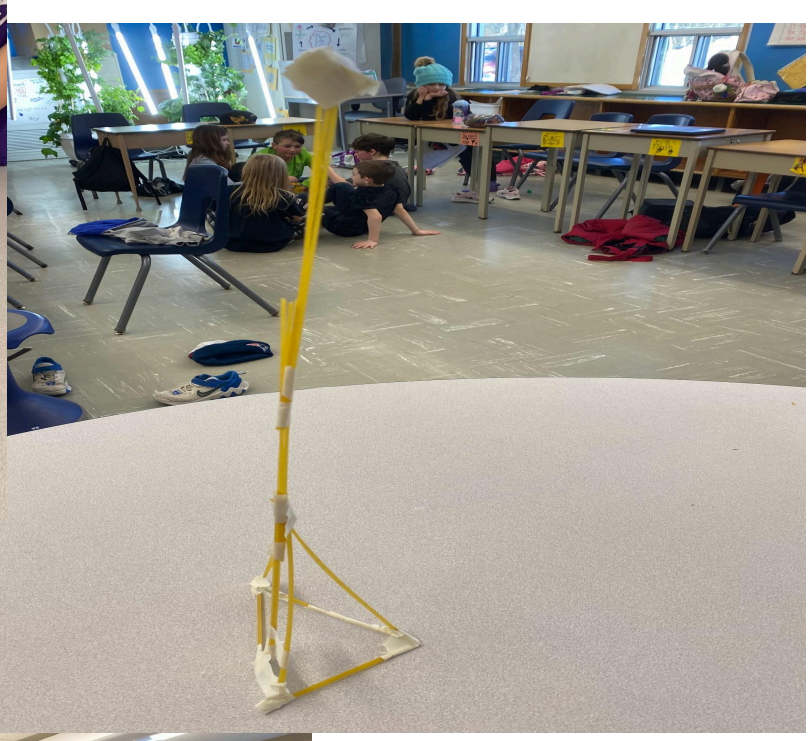
How to Make our Model 3D
Brainstorm

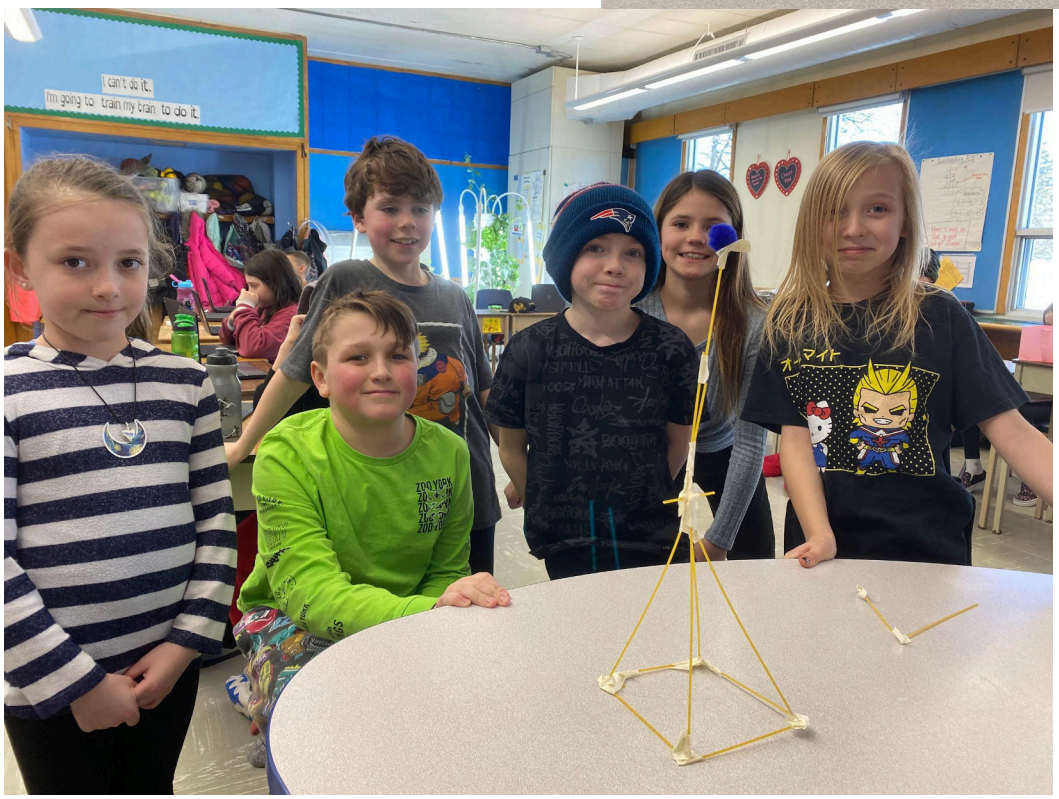
- Individual egg carton houses painted
- Toothpick wind mills
- Painted cardboard for lake, roads, trails, baseball field, soccer field
- Lego stores, buildings
- Trees??
- Solar panels??
- BIO use ??

Some very excited students made their own future city layouts....



Tower Building Challenge

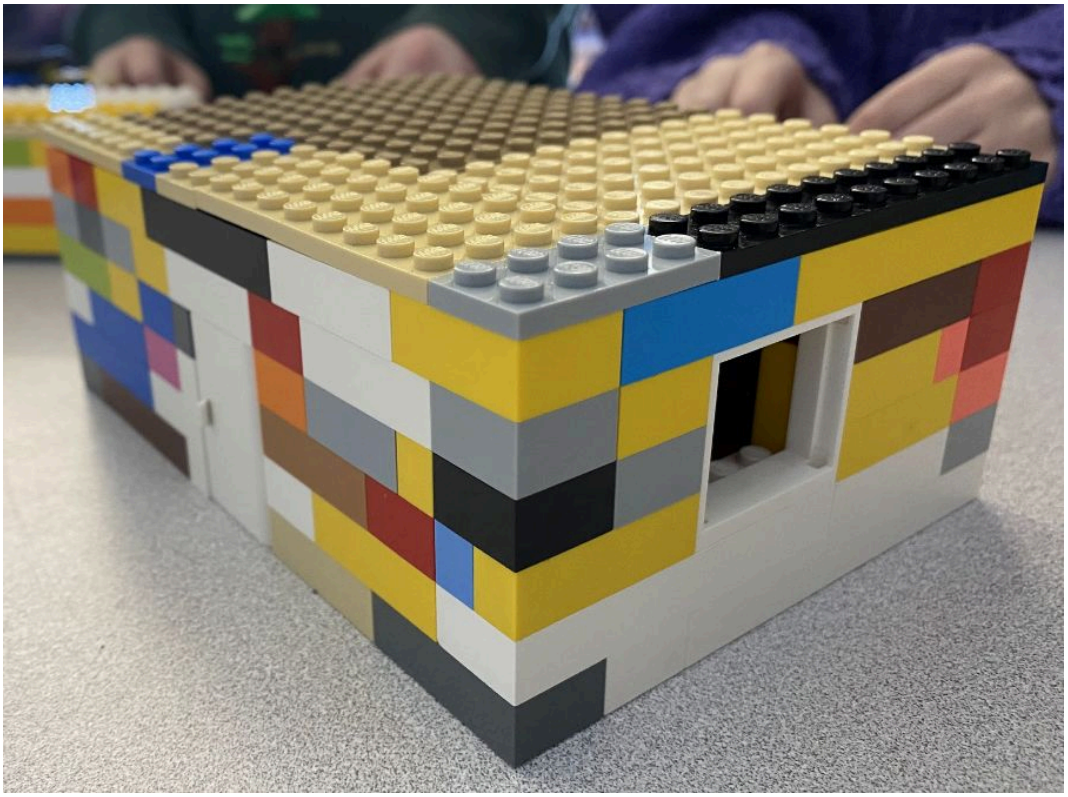




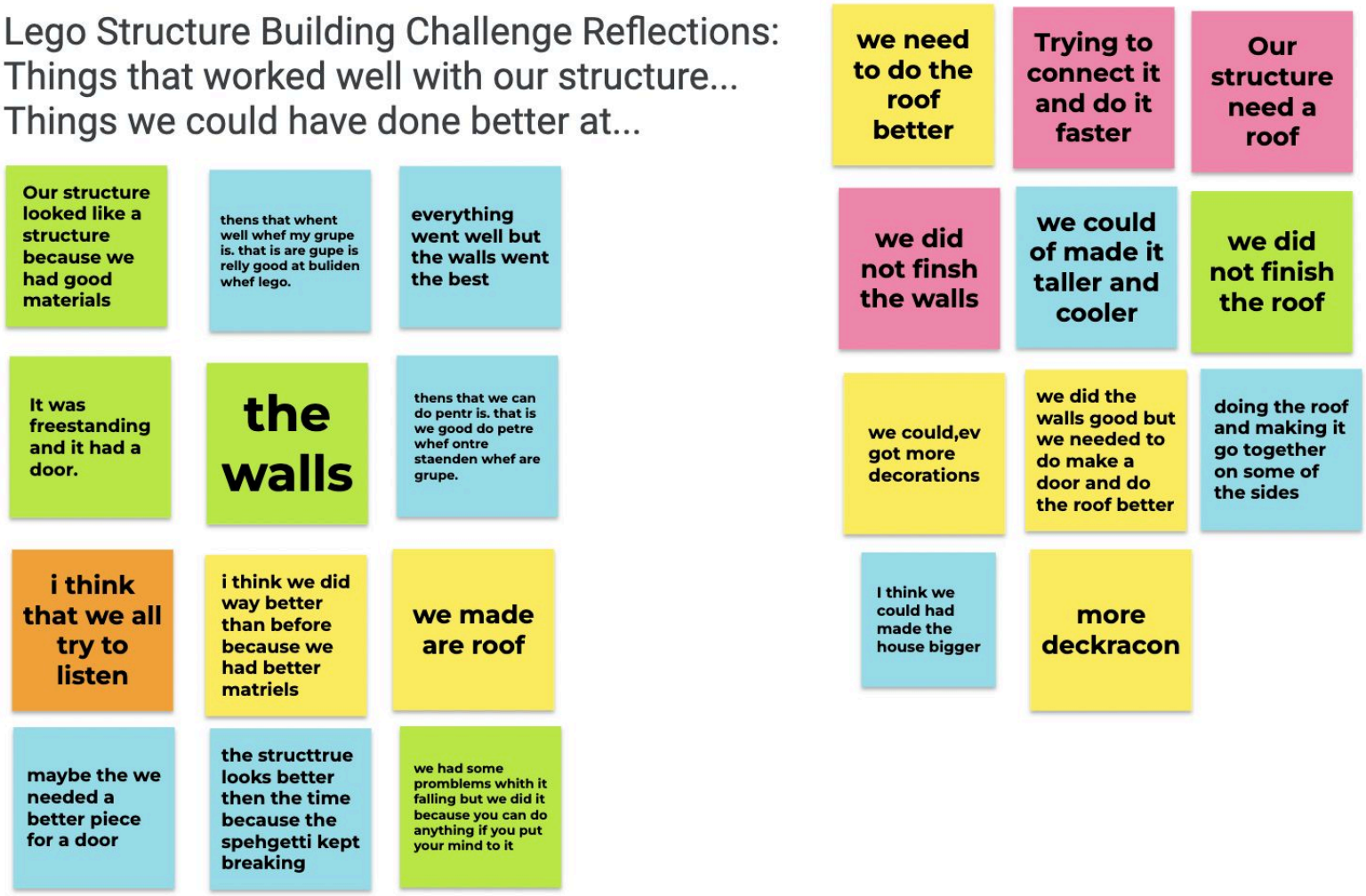
Reflecting on the Tower Challenge

Structure Reflection:
Something that worked well.
Something that you could improve on.

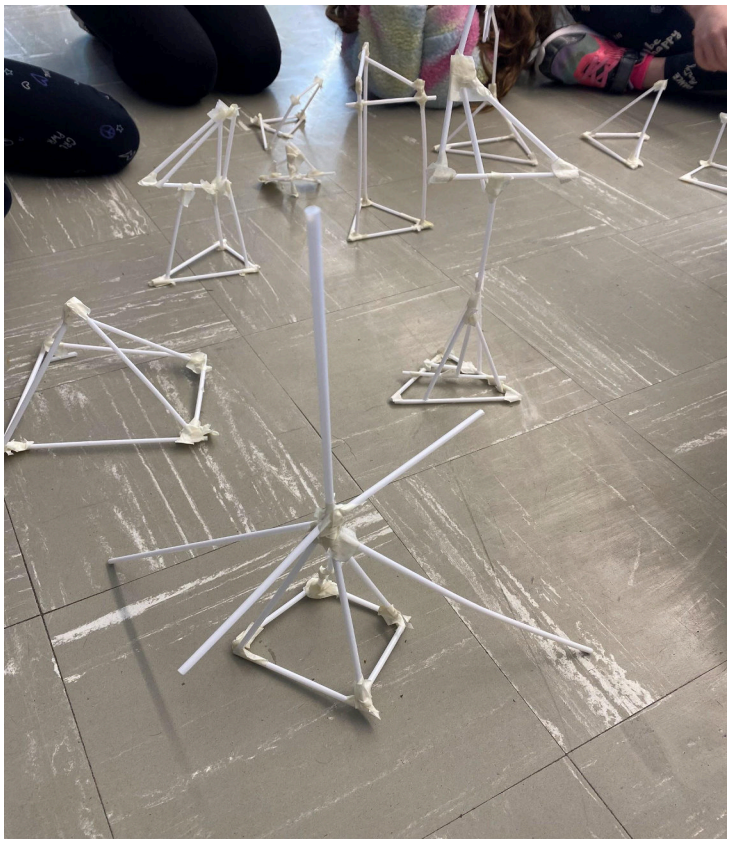
Lego Structure Challenge



Reflecting on the Lego Structure Challenge



Straw Tower Building



Engineer Visit March 22nd

Iyyad - Industrial Engineer
Abigail - Civil Transportation Engineer
Janelle - Agricultural Engineer

What do engineers do?

Engineers solve problems and build things. They brainstorm ideas with no judgement. If humans needs shelter then an engineer will design a home. When people need to get places quickly and safety, then an engineer designs roads, sensors for stop lights, vehicles.

Presentation Due May 1

Thoughts about our Waste Free Future City

- Need building material repurposing plant
- Public transportation (access)
- Electric vehicles, charging stations
- Do the grocery stores, schools need to be moved for greater access
- Walk ways, bike paths
- Food waste - animal waste
- Biofuel for organic waste - making into energy
- If we find more waste - then solve it, invent it, such as cars with solar panels or small windmills on cars
- Less houses, add apartments
- Bulk food purchases, bring their own margs, no packaging,
- Hello Fresh food delivery
- Solar panel phones
- Eco drive - solar charging devices

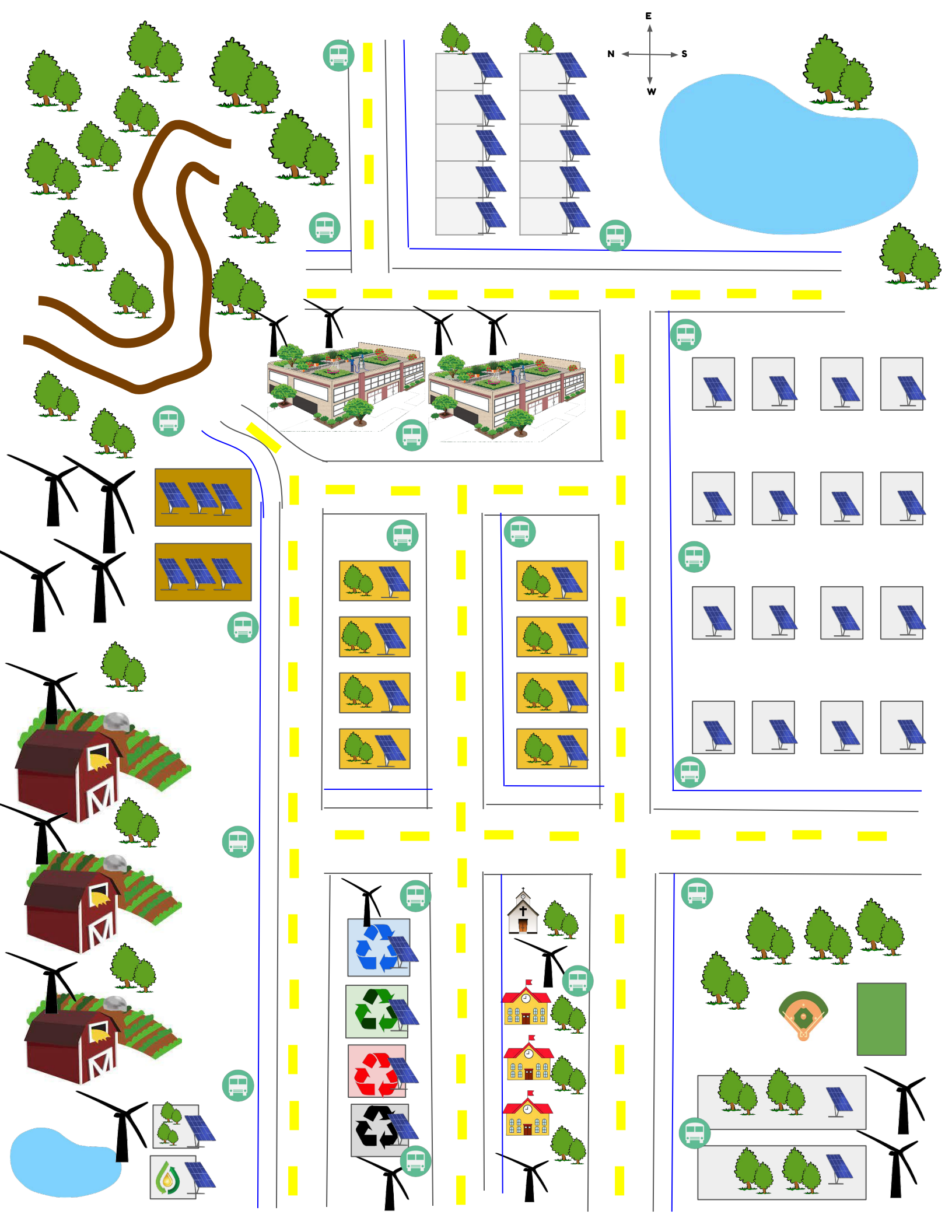
Thoughts about our Model

- Do not attach items so that we can move them
- Small blocks for recycle, repurposing for homes
- Clothes pins or wood pieces cut for trees, green playdoo for top of trees
- Green tissue paper for rooftop gardens
- Solar panel with popsicle sticks painted blue and glued together, blue construction paper
- Cut up water bottles for buildings
- Cut up cream containers for buildings
- Be prepared to have explanation of why things were made the way they are

What to use as a moving model?
How to make a moving model?

- Wind turbine
- Windmill
- Farm windmill
- Plastic bottle windmill
  Water mill
  Plastic windmill

Electronic Layout Draft #2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S
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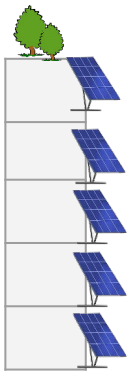
Updated Future City Legend

Apartment Building



Building Material Repurposing Plant

Bike & Walking Paths

Public Transportation Stop

Biofuel Plant

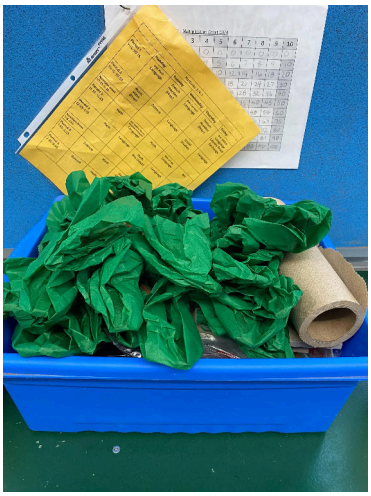
EV Charging Stations

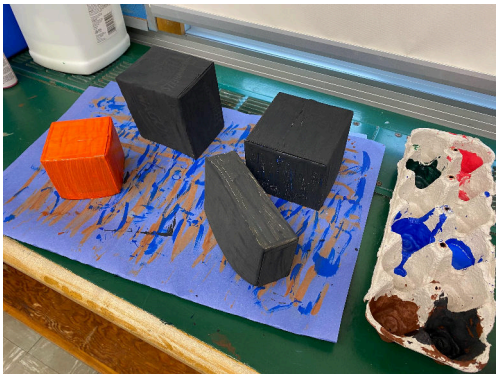
Building the Model

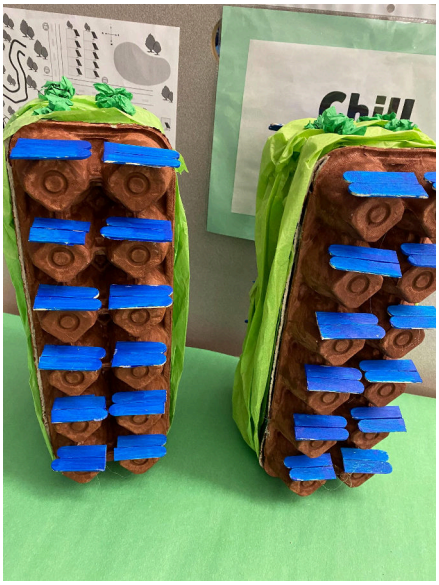

Three P
1. I am sorry I...
2. Next time I will try...
3. Will you forgive me?
Tag Rules 3x3
STONE


I made a mistake.
Mistakes help me learn.
I don't understand.
What am I missing?
BE KIND


Local News
of Interest
Chill
Zone








ZOO YORK
Chill Zone


FRACTIONS


my brain to do it.
Reading Crusher
Open


I make a mistake.
Mistakes help me learn.
I don't understand.
What am I missing?
BE KIND

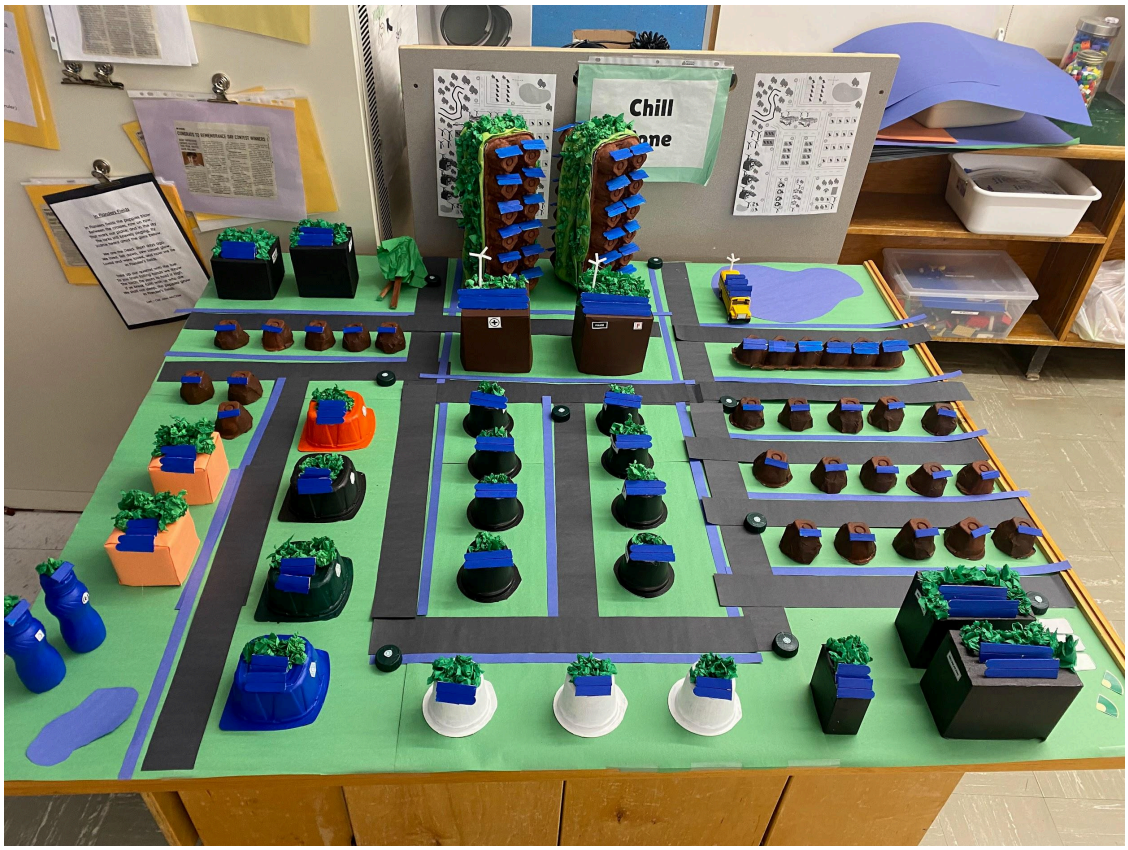

Chill
Zone
size
shape
purpose
carry a load


Chill


Chill


Chill


MCDONALDS
BANK
PIZZA
POLICE


Chill

Finished Model

Moving Part

Click on Image Below

Our Future City Submission

Full Model

Robert Little PS
Future City: Acton

Our city is a small farming city in a warm, windy climate.

Residential Zone

Detached Homes Neighbourhood

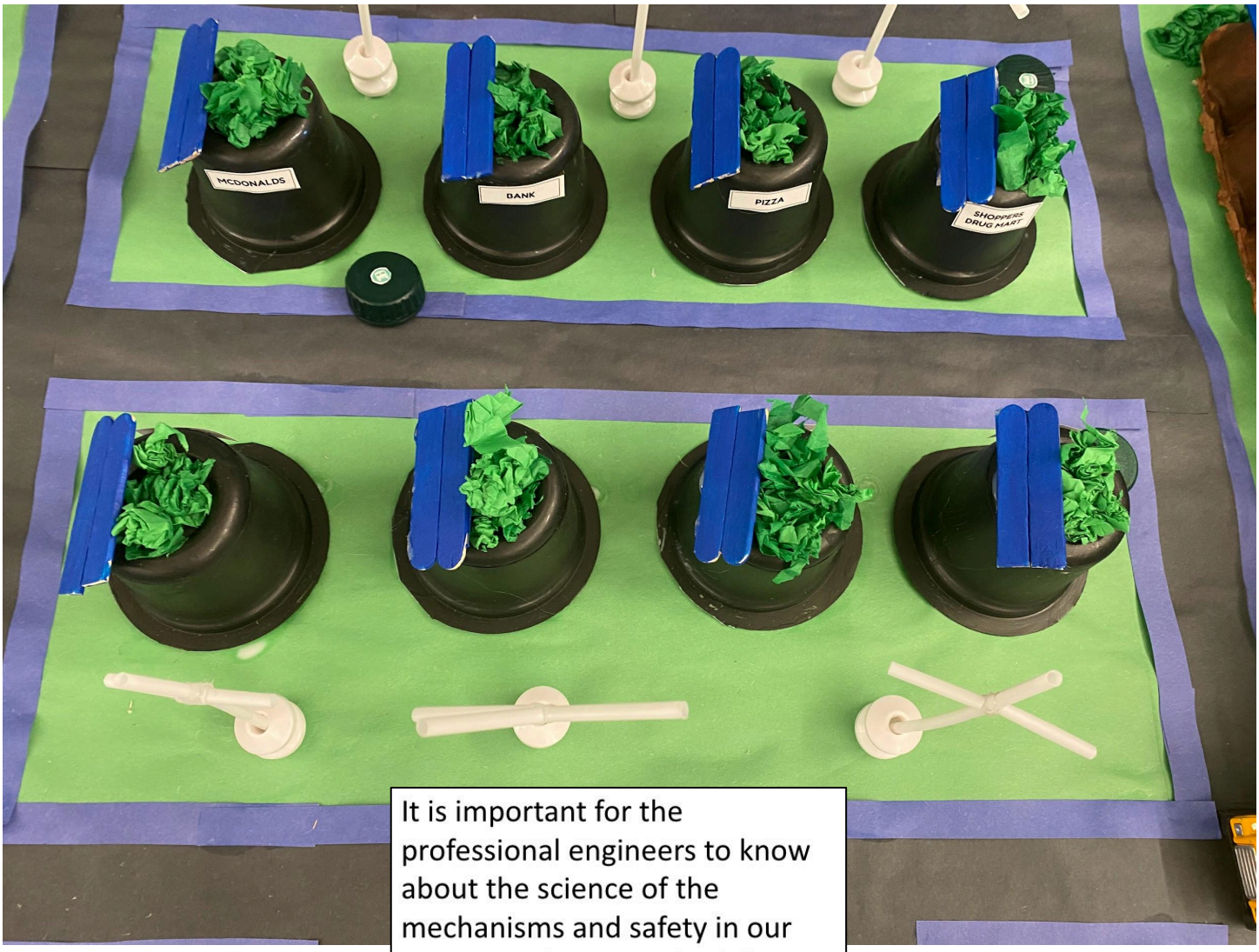
Apartment Buildings

Townhouses

It is important for professional engineers to know about the science of the mechanisms and safety in our residential zone in many areas including:

- low flow taps
- compostable toilets
- green roofs
- renewable energy
- compost bins & recycle bins
- net zero waste homes
- solar panels on all homes and apartment balconies
- apartment side gardens
- proximity to groceries
- proximity to transportation
- outdoor compost

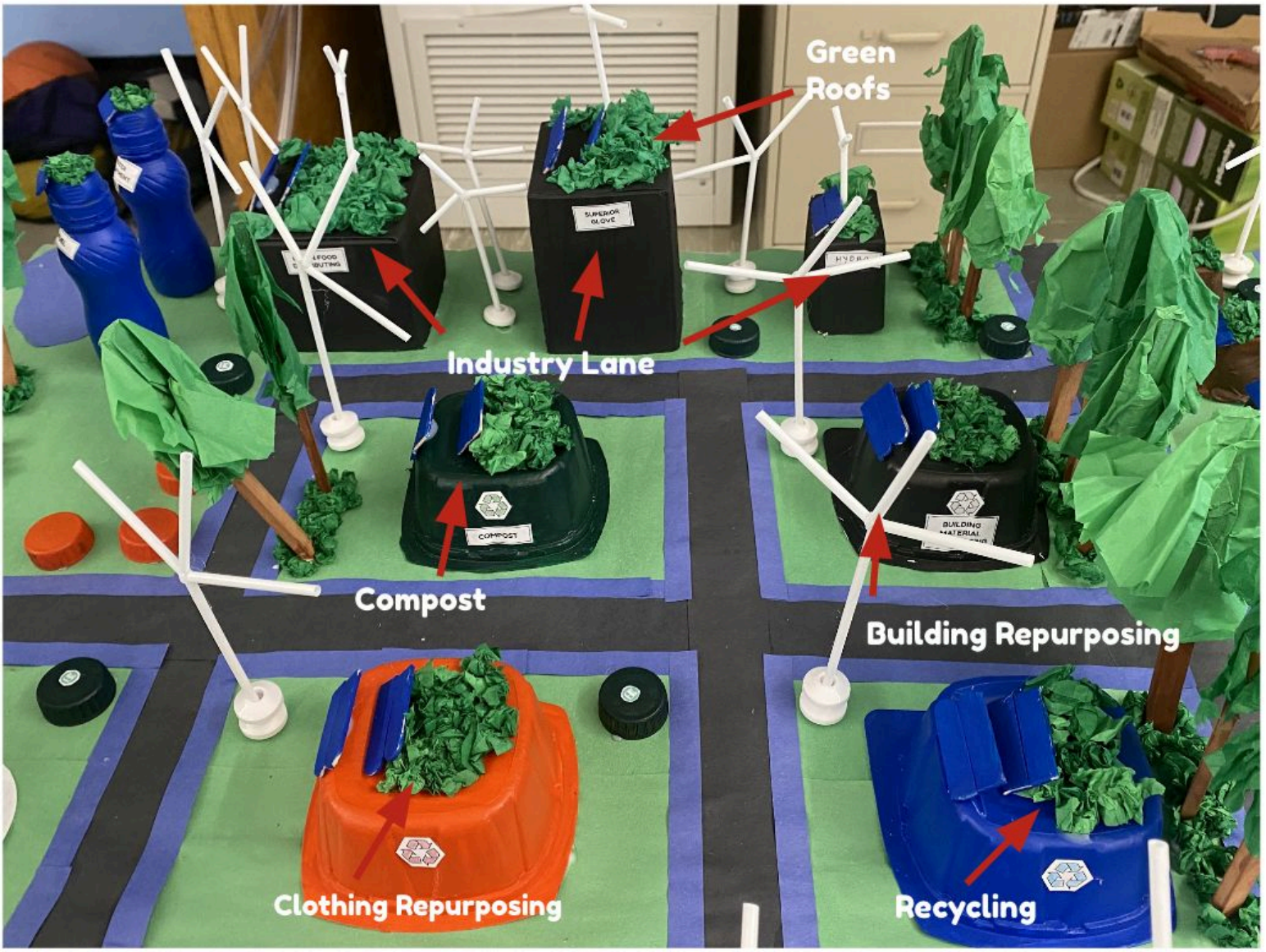
Commercial Zone



It is important for the professional engineers to know about the science of the mechanisms and safety in our commercial zone in the following areas:

- reusable packaging
- paper bags
- donation bins
- building light sensors
- cooler and freezer sensors for lighting
- clean energy
- low flow taps
- Bring Your Own (BYO) bags
- grocery stores location in the the strip for proximity to residential areas
- solar panels, green roofs, wind energy
- access to public transportation

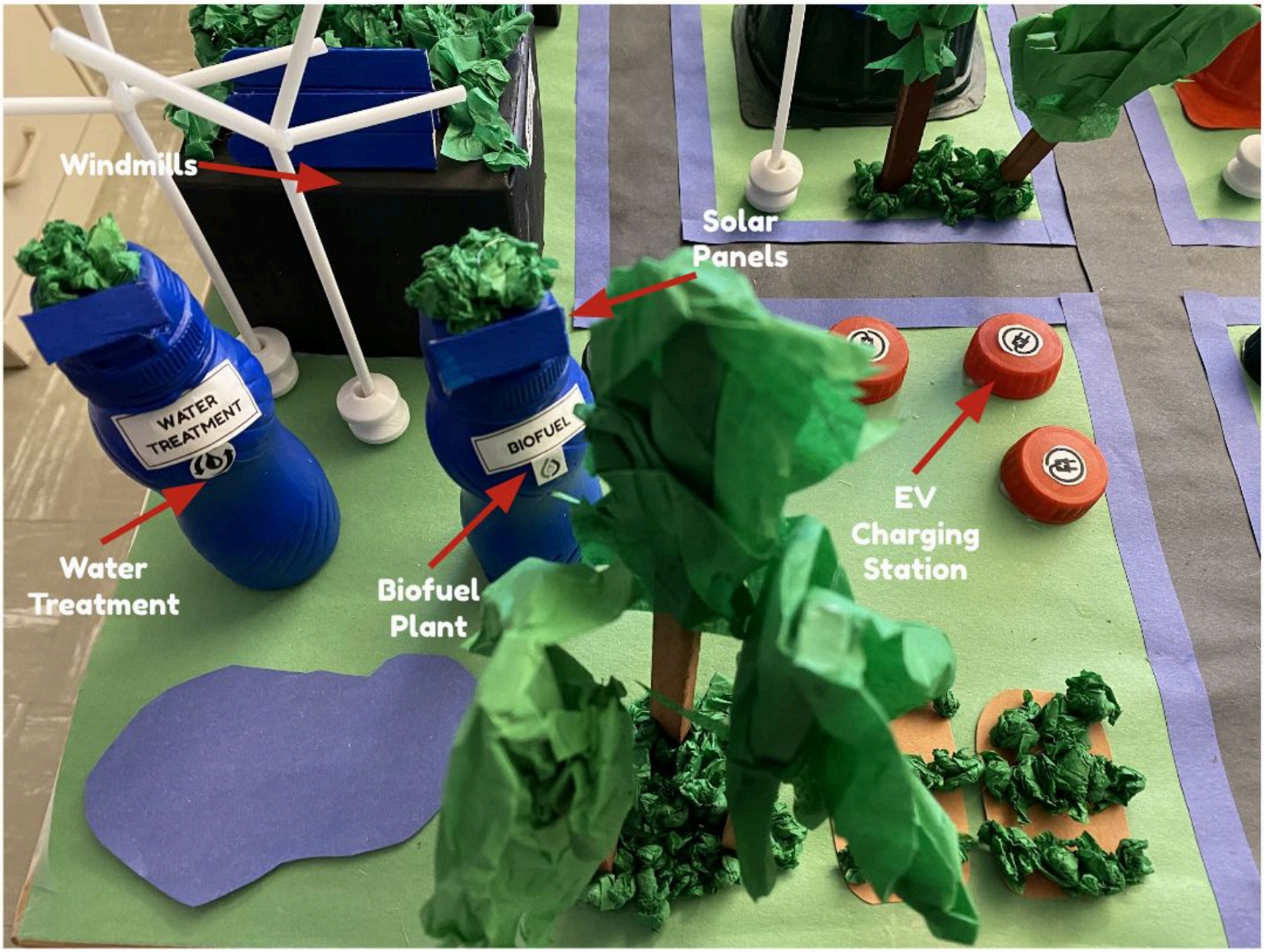
Industrial Zone



It is important for professional engineers to know about the science of the mechanisms and safety in an industrial zone and to also know about our:

- clothing repurposing
- locally grown food
- recycling bins
- green roofs
- hydro power from wind energy
- solar panels
- local food distributing
- composting
- building materials repurposing

Infrastructure Example



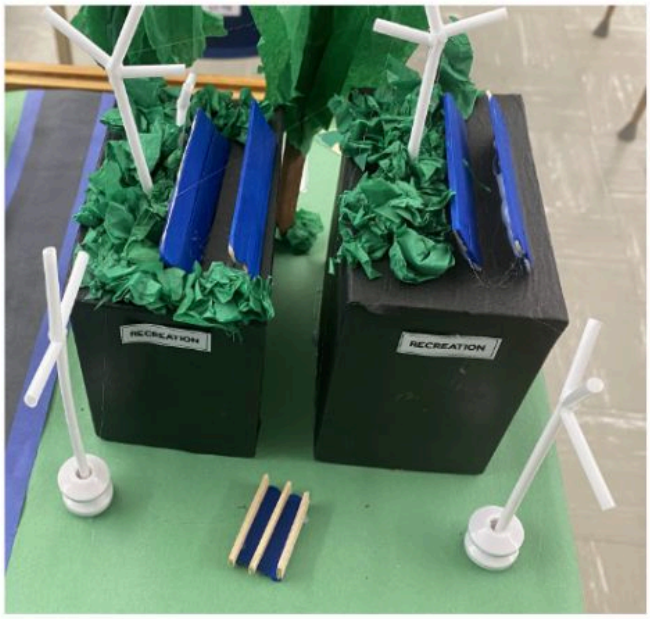
The infrastructure shown here includes water treatment plant, biofuel plant, hydro, solar & wind power, multiple public charging stations as well as shared bikes and public transportation.

Our infrastructure relates to the challenges of circular economy/sustainability by focussing on:

- renewable resources
- choice of renewable materials used
- sharing of charging stations and bikes
- the biofuel plant allows for energy to be made from plants, organic waste like dog poop, agricultural, domestic and industrial biowaste

City Services Example

Recreation



Health/Police/Fire

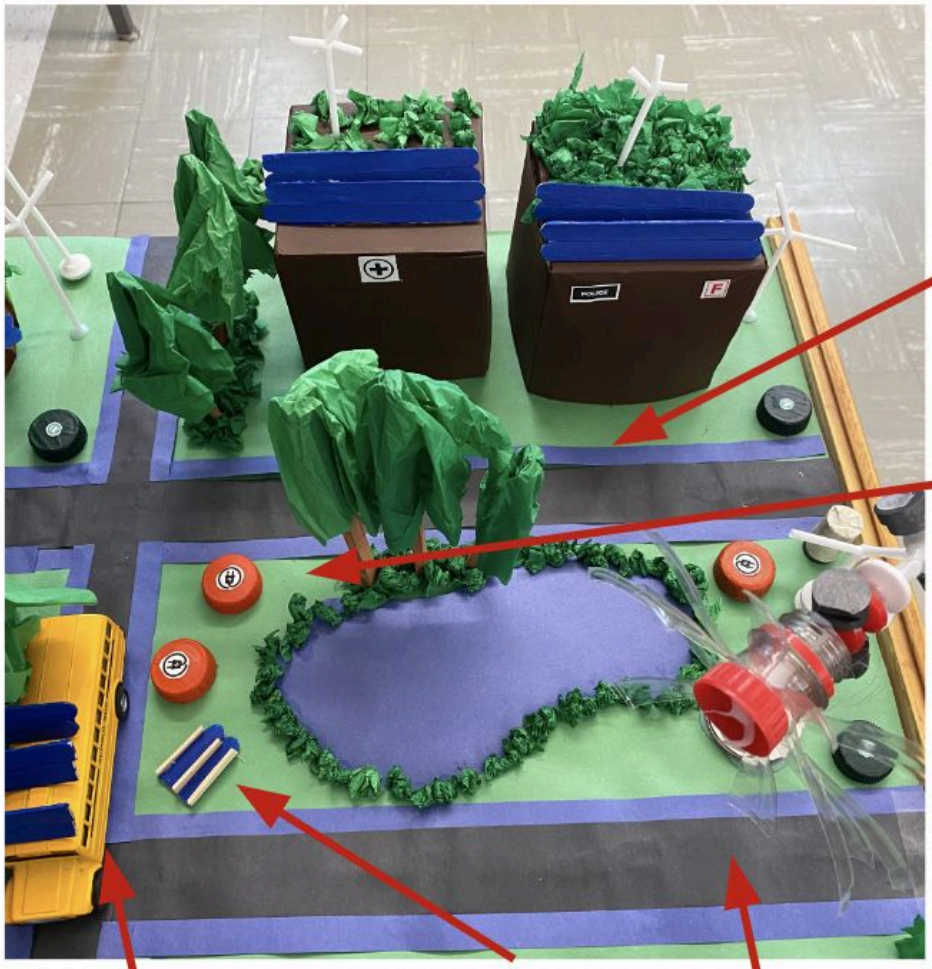
Schools
Daycare

The types of city services shown here include health, education, daycare, recreation, transportation, police, fire, recycling, compost facilities, and shared EV charging stations.

Some of the city's operations we want the professional engineers to know about include:

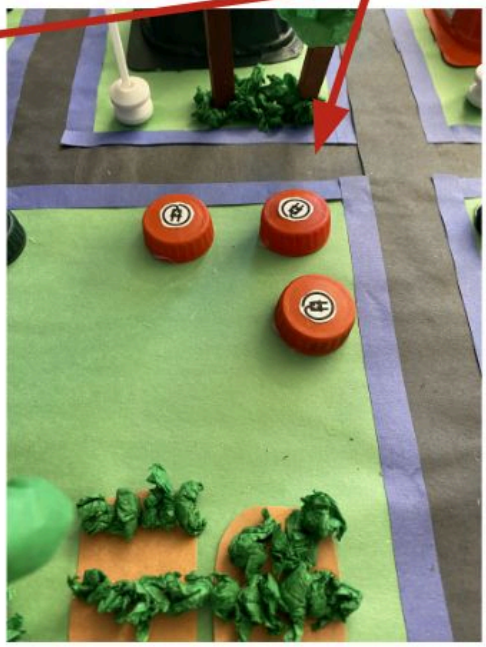
- roundabouts for traffic control rather than lights
- proximity of emergency services
- city bylaws for EV automobiles, solar panels for residential, industrial, and commercial buildings
- EV & solar powered transit
- recycled materials for parks
- city programs for green roofs and shared gardens
- bylaws for solar panels

Transportation Example



Bike & Walking Lanes

EV Charging Stations



EV Public Bus Transportation powered by solar, EV & biofuel

Shared Bikes

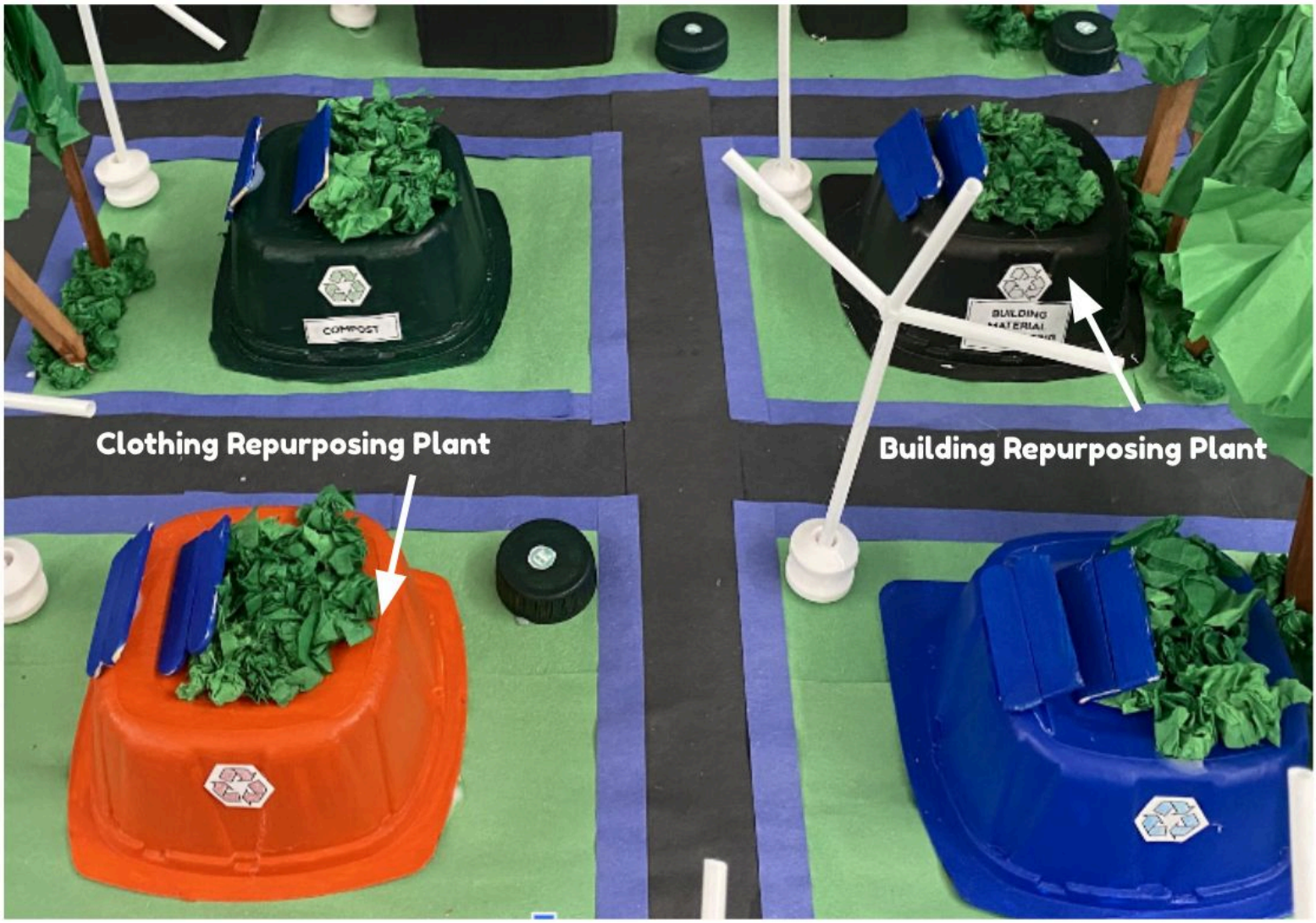
EV Automobile Lanes

Some types of transportation systems are shown include EV and solar panel public transit, roads for automobiles, bike & walking lanes, and shared bikes.

Things we want the professional engineers to know about your transportation system include:

- city bylaws for EV automobiles
- shared bikes
- EV charging centres at opposite ends of the town
- city incentives for biking and walking
- use of roundabouts for traffic control (no traffic lights)
- solar panels on public transportation
- multiple bus stops through-out city for greater access

Circular Economy Solution Example 1



The circular economy solution shown here are clothing and building material repurposing centres to reuse materials and support zero waste.

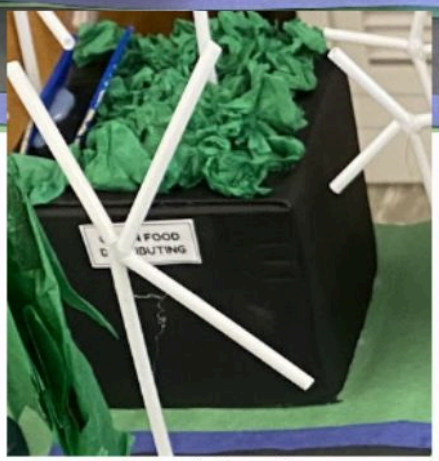
It is important for the professional engineers to know about this resource because:

- all materials for buildings are recyclable and produce less waste such as concrete broken into limestone for parks and sidewalks, old furniture made into wood chips for public trails
- reusing fabric materials for different purposes such as using clothing for furniture or blankets
- electronic recycling bins to support zero waste

Circular Economy Solution Example 2

Local Farms

Apartment Side & Roof Gardens



Local Food Distributing Plant

Community Garden / Seed Libraries / City Seed Programs

The circular economy solution shown here is locally sourced food to promote local food growth equalling less waste, lower cost & less pollution contributing to climate change.

It is important for the professional engineers to know about this resource because:

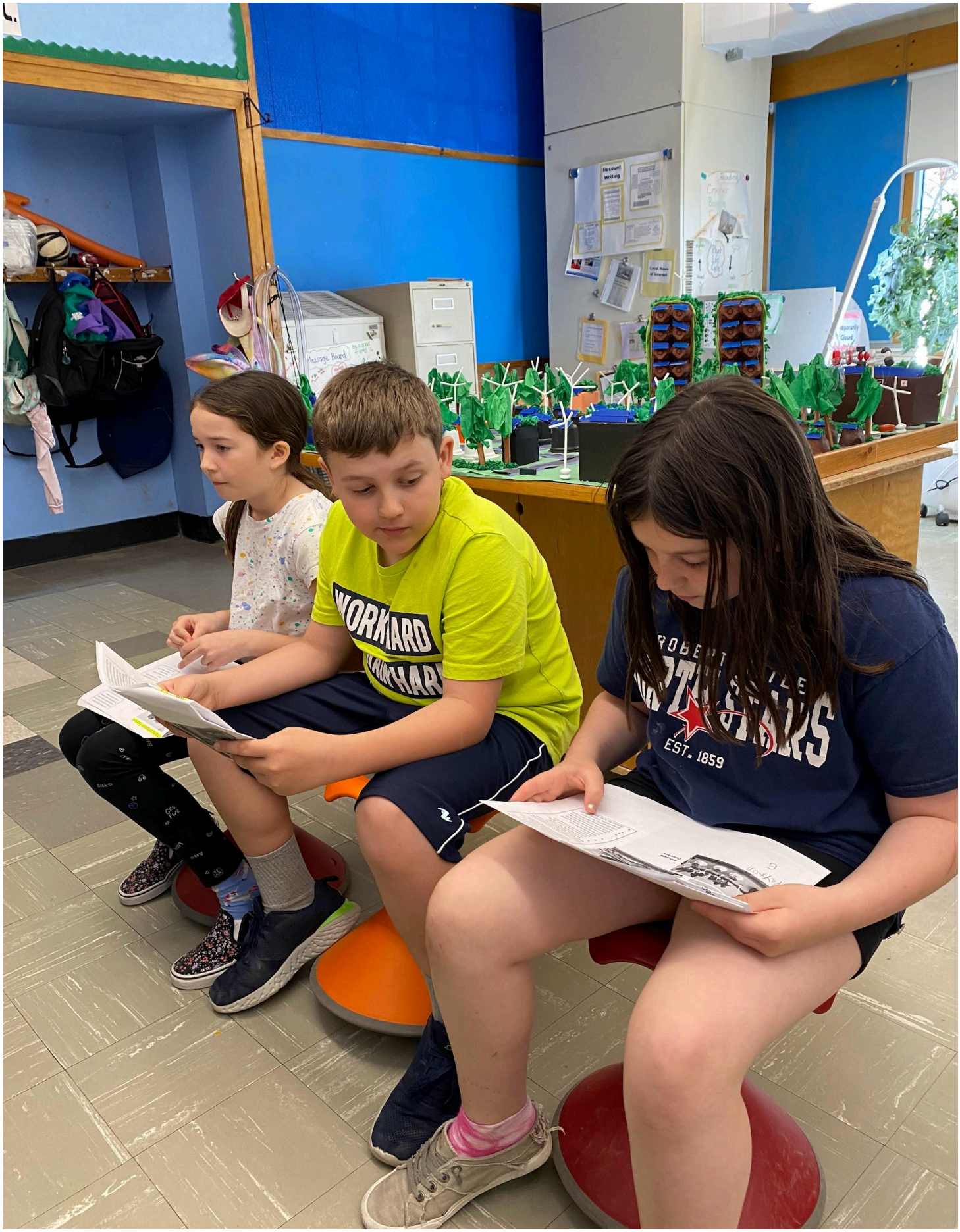
- local food source from farms
- local food source from rooftop gardens
- local food source from apartment side gardens
- seed libraries
- community gardens
- local food distributing plant
- weekly farmers markets in the downtown strip
- city incentives for food production from gardens

Moving Part

- Our moving part is a windmill. This windmill collects the winds energy which is then distributed by the local Hydro company to power industrial, commercial, and residential areas.
- The windmill is made from a cut up pop bottle, beads, wood sticks, cardboard, and a straw.
- Initially the windmill was not balanced and did not spin easily. We made changes to it by moving the beads and adding some magnets. This also allowed us to move it with other magnets.

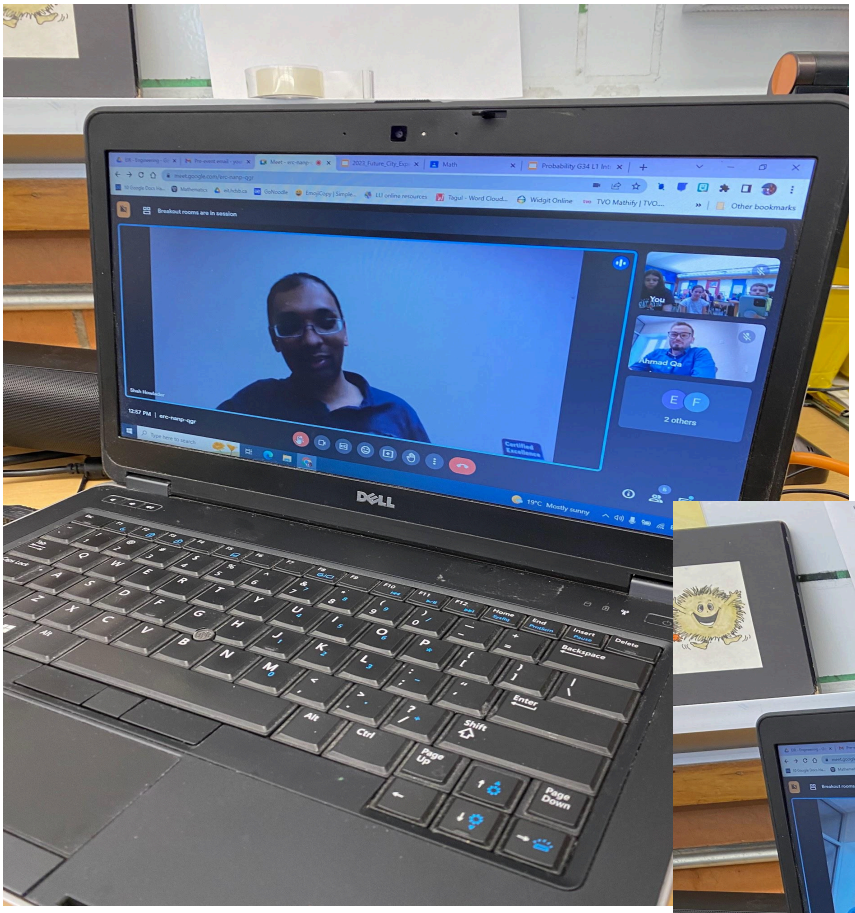
Our Student Presentation to the Engineer Committee

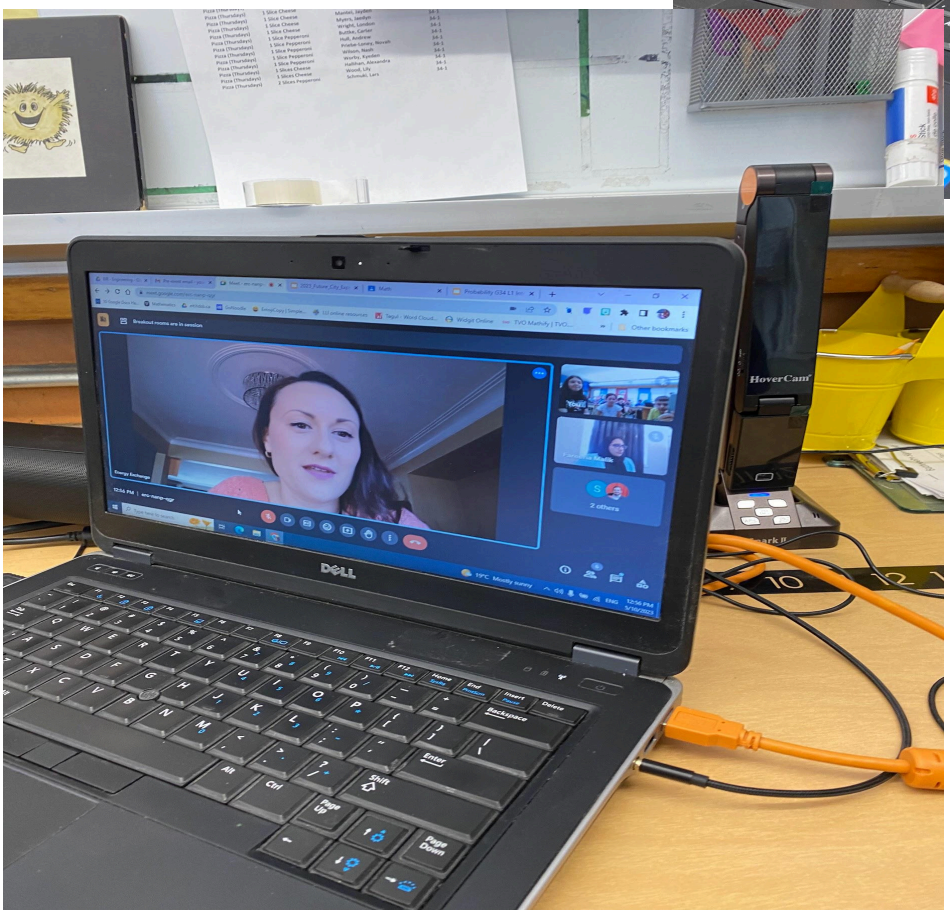
Our Presenters: Alex, Nash, & Peyton




25 hours one week and 32 hrs another week. How many hrs did he play altogether
U- +
M- 25+32
P- 25 +32 57
S- Noah played 57 hrs of v.games
Crossed arms
This week I am proud of...
Next week, I want to work on...
Biography Writing
N - OPEN
N- Residential
P- Commercial
N- Industrial
A- Infastructure
P- City Service
A- Transportation
N- Circular #1
N- Circular #2
P- Moving Part.
GROWTH MINDSET TOOL
Three Part Apology
My Father the Dog
LILLY'S PURPLE PLASTIC PURSE
KEVIN HENKES
IF YOU DETECT FIRE AND THE ALARM
IF YOU HEAR ALARM LEAVE BUILDING
YOUR EXIT IS Door #14
YOUR ALTERNATE EXIT IS Door #1 (front board)
Tech Tub
HANDLE WITH CARE
SCHOOL

Engineers Asking Questions

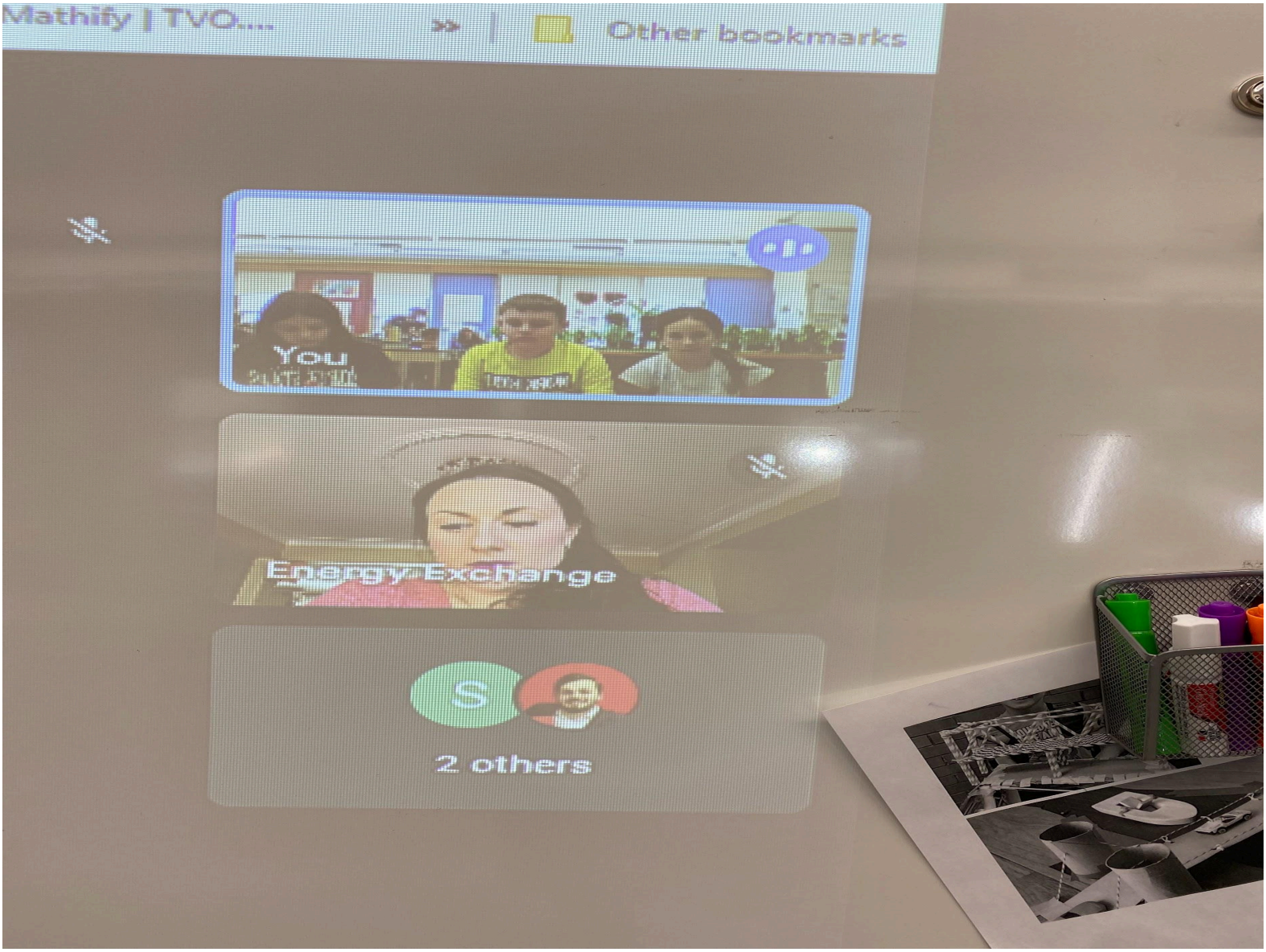




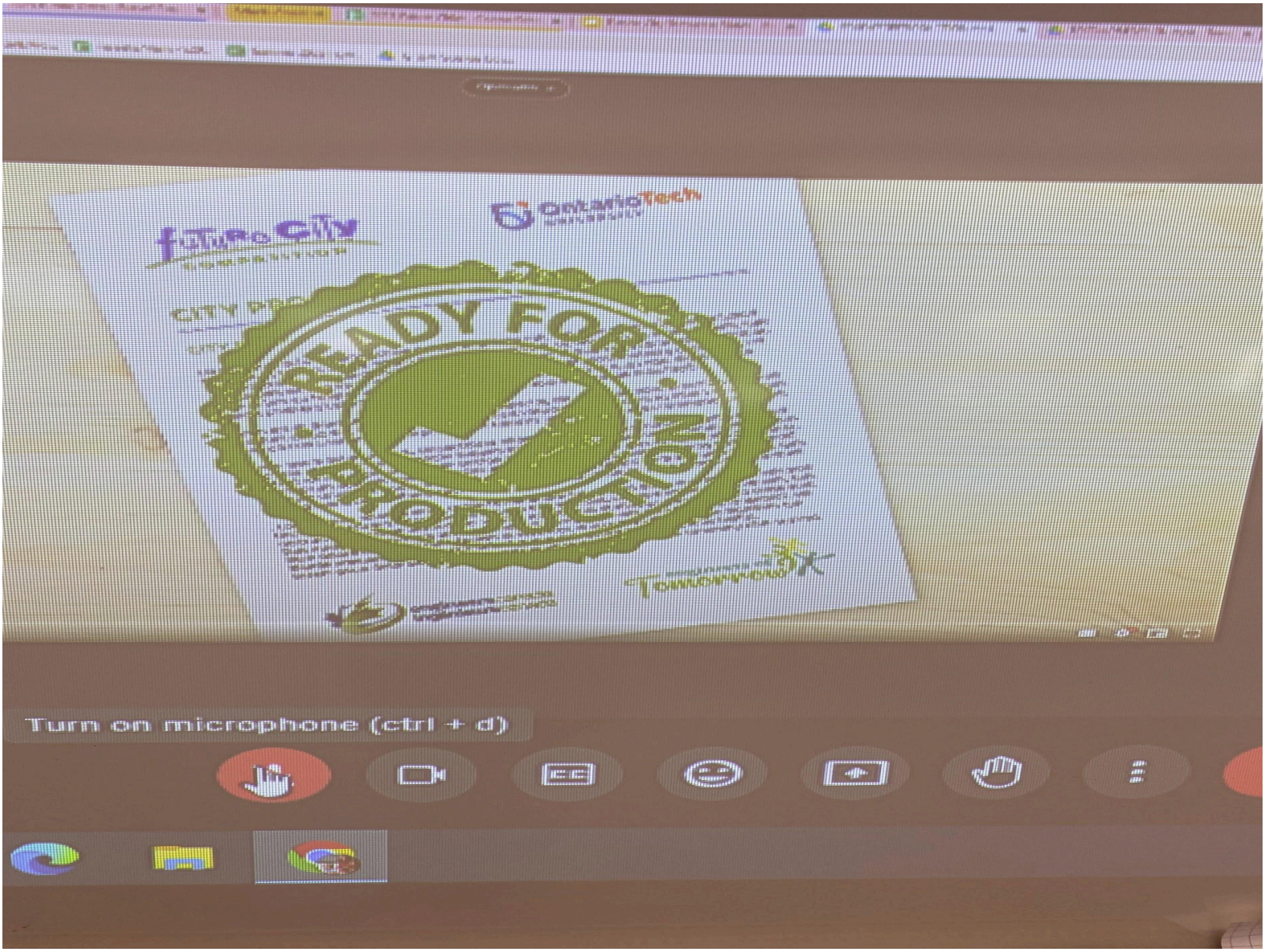
The class watching....


Good Readers...
made a mistake.
Mistakes help me learn.
JAYDEN

Our Zoom Meeting



We got the ‘Ready for Production’ seal of approval from the Engineers!



I am so proud of the students for all of their hard work on this project. We looked at the other models today and voted on our favourites. Results are in on Friday! Kudos to every student in our class for their contribution to this project. We have many future engineers in our classroom!