HOW DO YOU SPARK STUDENT INTEREST IN WASTE?

By using our Issue Cards! **Issue Cards are over 65 printable quotes, statistics, graphs, maps, definitions, excerpts, cartoons and photographs.** In groups, students will examine this content to gain a multidisciplinary understanding of waste and its relationship to current economic, social and environmental issues in New York City and the world. The Cards—also available as PowerPoint slides—are organized into five sets: Consumerism, Justice & Equity, Non-Renewable Resources, "Away," and a History of Waste in NYC. The size of your class, the dynamics and learning styles of your students and the amount of time you would like to spend with the Cards can guide the way your students use them. Here is one successful method:

1. **Students Break into 5+ Groups**
   - Each group receives a unique set of Issue Cards. Students spend time examining the content of their group’s cards and begin to form reactions.

2. **Students Complete Individual Response Slips**
   - After examining their set of Issue Cards, students complete Response Slips to express what they think, feel or wonder about the information of one or more Cards.

3. **Groups Construct a Poster and Present to the Class**
   - In their groups, students share their reactions to the content, identify common themes and work together to create a poster to be shared with and presented to the rest of the class.
OVERVIEW Understanding New York City

WHAT IS NYC DOING ABOUT ITS WASTE?

New York City’s waste systems are vast, complex and fascinating. Many New Yorkers do not know where their waste goes and doubt the efficacy of NYC recycling. **Our PowerPoint presentation grounds students in the reality of NYC waste management today and empowers them to recycle right.** Upon viewing statistics, charts, maps, images, and visual games, students will understand the composition of their waste, where it all goes, how it gets there, and the challenges and goals of NYC’s 0x30 sustainability plan. Students will also learn how to properly sort their waste in school and at home. With this overview and understanding, students will be equipped to identify specific problems in their school community and take creative action toward solving them. The presentation slides are organized into three general categories:

**Data**

- 16% diversion rate in 2017
- 100% diversion rate by 2030

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Instructions</th>
<th>Set-Out Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic waste</td>
<td>after 2040 but before 2030</td>
<td>X</td>
</tr>
<tr>
<td>Paper &amp; cardboard</td>
<td>after 2040 but before 2030</td>
<td>X</td>
</tr>
<tr>
<td>Plastic &amp; aluminum</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**Systems**

**Sorting**
LESSON PLAN Understanding New York City

In *Waste Deep 2*, students view city-based data, statistics, charts, maps, images, and visual games to understand the composition of their waste, where it all goes, how it gets there, and the challenges and goals of NYC’s 0x30 sustainability plan. Students will also learn how to properly sort their waste in school and at home and start to imagine school-based solutions to waste.

**OBJECTIVE**

Students will:
- learn about OneNYC – New York City’s ambitious plan to become the most resilient, equitable, and sustainable city in the world
- learn about the goal of sending Zero Waste to landfills by 2030 and the systems NYC has put in place to tackle the “0 X 30” vision
- gain an understanding of NYC’s waste-related statistics and how these problems impact our city
- learn how they can be a part of the solution, including recycling basics
- brainstorm school-specific solutions to waste

**INQUIRY/CRITICAL THINKING QUESTIONS**

- What can we do to reduce the negative impacts of waste on our health, environment, and economy?
- What are the conditions needed to affect behavior change?

**MATERIALS NEEDED**

**Teacher Materials**
- Completed Waste Journals
- Posters on Display (from previous lessons)
- NYC Data, Systems, and Recycling Slide Deck
- Sample recyclables, waste items and recycling bins

**TIME REQUIRED**

- One 45-minute period

**PROCEDURE**

*Waste Deep 2* explores data, systems, and solutions to waste issues in NYC. Through a short opening discussion, presentation, and closing brainstorm discussion students will gain a thorough understanding of the City’s waste landscape and start brainstorming ways to narrow the gap between our recycling knowledge/infrastructure and our recycling behavior, particularly in schools.

I. **Waste Journal Homework Discussion** (5 minutes) discuss student findings from their Waste Journal

II. **Phase 1 Issue Poster Recap**: (5 minutes) students review issues from Phase 1 and share their own associations with waste

III. **NYC Data, Systems, and Recycling 101** (25 minutes) using slide deck with talking points, present slide show to students

IV. **Idea Brainstorm** (10 minutes)

*Facilitate a discussion around recycling behaviors in school.*

- Ask students to start thinking about why there is such a big gap between what we know (and the waste management infrastructure in place) and our behaviors.
- What are ways we could help change behaviors in our school?

Continue the journey in *Waste Deep 3: Investigating Your School!*
0 x 30
One New York
The Plan for a Strong and Just City

VISION 3: Sustainability

GOAL 2
New York City will send zero waste to landfills by 2030.

zero waste schools
Make all schools Zero Waste Schools.

Expand the NYC organics program to serve all New Yorkers by the end of 2018.

Enhance curbside recycling program.

Reduce the use of plastic bags and other non-compostable waste.

Give every New Yorker the opportunity to recycle and reduce waste, including at NYCHA housing.

Expand opportunities to reuse and recycle textiles and electronic waste.

Develop a Save-As-You-Throw program to reduce waste.

Reduce commercial waste disposal by 90% by 2030.
New York City produces **6 million tons of garbage** per year.

115,000 TONS/WEEK!
16% diversion rate* in 2016

100% diversion rate* goal by 2030

*diversion rate (n.)
the percentage of waste diverted from traditional disposal (i.e., landfilling, incineration) to be recycled, composted, or re-used
Trash Journey & Impact
Picking Up

Every day, more than 6,000 men and women of the Department of Sanitation collect garbage from residences and public buildings in New York City.

They work in pairs and collect more than 10,000 tons of material* every day. All that waste goes into the back of compactor trucks.
When trucks are full, they head to one of the city's transfer stations—except for Manhattan residents' waste, which goes to an incinerator or transfer stations in New Jersey*. 
Arriving at a Transfer Station

Transfer stations are consolidation centers for waste. They combine material from several collection trucks into containers.

Tipping

Inside the transfer station, trucks unload their content onto a lower level known as the "tipping floor".
**Loading for Transportation**

After leaving the transfer station, waste containers are loaded on trucks or trains for long-distance transport.

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**Compaction & Containerization**

Front loaders are constantly moving waste onto treadmills, which drop it into compactors.

The compacted waste forms large blocks which are loaded into orange containers.
NEXT STOP: Landfills
The closure of Fresh Kills

In 1996, the City pledged to close Fresh Kills landfill in five years, due to intense community pressure
Exporting waste costs NYC close to $400 million/year.
Landfills are essentially human-made mountains of waste and can reach hundreds of feet in height.

Arriving at a Landfill
Waste arrives at its final destination after a long journey.
METHANE GAS RELEASED

LEACHATE
A million years??

350  500  1000
Over 70% of NYC’s waste passes through 3 neighborhoods:

South Bronx
North Brooklyn
SE Queens
Clustered transfer stations

- >25% below poverty
- Transfer station

These private transfer stations were built on land zoned for industrial use, concentrating truck traffic in the adjacent neighborhoods, which are largely home to low-income communities and communities of color.
Schools have the potential to divert as much as 86% of their waste for recycling or composting through DSNY curbside collections.

2017 Composition of Schools Aggregate Discards

- **35%** Recyclables
  - 21% Clean paper, cardboard
  - 14% Metal, glass, plastic, cartons
  - 0.04% Harmful household products
  - 0.03% E-Waste
  - 0.6% Plastic shopping bags
  - 0.8% Textiles
  - 0.6% Construction, demolition

- **51%** Organics suitable for composting
  - 29% Food scraps
  - 20% Food-soiled paper
  - 2% Yard waste

- **12%** Other
  - 2% Other divertable materials

Note: Totals may not sum exactly due to rounding.
1,800 NYC schools
1.1 million students
x 800,000 meals daily

= HUGE IMPACT!

86% is recyclable or compostable

So...why YOU?
Why schools?
Recycling 101
Sort It Out!
Green Bin Don’ts
Blue Bin Don’ts

- Plastic bag
- Styrofoam
- Paper towel
- Pens and markers
What Goes in My Trash Bin?

- Soft Plastics
- Chip Bags
- Plastic Wrappers
NO RECYCLABLES IN THE TRASH BIN
Recycling can create up to 7x more jobs than sending waste to landfills.
What Goes in My Green Recycling Bin?

Mixed Paper
Cardboard
Recycling (half of the) paper in New York City*

About half of the paper collected by DSNY is recycled in the city, at the Pratt Paper Mill on Staten Island.*

The paper is taken there from Manhattan by barge, or from Staten Island and South Brooklyn by collection trucks.
Transferring the paper to barges

Paper collected in Manhattan arrives by truck at the marine transfer station at 59th Street on the Hudson River.

There, it is tipped into barges that will make the trip to the paper mill on Staten Island.
Processing the paper in Staten Island

The paper is unloaded from barges by a crane and then loaded into the paper mill's production line. Paper arriving on trucks will go through the same process.
Blue Bin Journey
What Goes in My Blue Recycling Bin?

- Metal
- Rigid Plastics
- Glass
- Cartons
Arriving at the Sims Material Recovery Facility in Brooklyn
Metal, glass, and plastic

The other part of DSNY's recyclables, composed of mixed metal, glass, and plastic, are tipped on an opposite corner of the facility for further sorting.

These recyclables are placed onto a raising treadmill, which leads to the mechanized sorting system in the adjacent room.
Mechanized sorting

Metals are recovered with magnets and electrical currents; several mechanical processes separate glass, plastic film and paper. The remaining plastics go through optical sorters that separate them by chemical composition.
The result: sorted bales

The end product of this sorting system are different bales, each containing a specific type of material.

Here, bales of hard plastics are being transported to storage by a forklift.
Brown Bin Journey
What Goes in My Brown Organics Bin?

- All Food Scraps
- Compostable Trays
- Napkins
- Food-soiled Paper
About one third of New York City's residential waste is comprised of organic material.

Alternatives to landfilling

- Composting facility
- Anaerobic digester
Arriving at the Staten Island Composting Facility

Composting the organics

After being unloaded from collection trucks, organics are mixed with woodchips and arranged in long rows, called windrows.
Compost made from local organics

The resulting compost is donated by DSNY for local use in gardening, public greening, soil mitigation, and street tree stewardship.

From food scraps to food

The produced compost is often used in local community gardens and farms, helping turn food scraps into food again.
School Recycling Systems
Bins and Signage

Cafeteria

Classrooms and Offices

Hallways and Shared Spaces
Collection, Storage, Set-out, Trainings

Dual-bin collection

Designated storage space

Curbside set-out

Custodial Staff Trainings
### DSNY Collection Schedule

#### DOE Building Code: M470 Address: 145 W 84 ST, 10024

<table>
<thead>
<tr>
<th>MATERIAL TYPE</th>
<th>INSTRUCTIONS</th>
<th>SET OUT TIME</th>
<th>COLLECTION TIMES BEGINNING @4PM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organics</strong></td>
<td>In latched organics bins</td>
<td>After 2pm but before 4pm</td>
<td>ORGANICS ORGANICS ORGANICS ORGANICS ORGANICS</td>
</tr>
<tr>
<td><strong>Mixed Paper</strong></td>
<td>In clear bags or bundles</td>
<td>After 2pm but before 4pm</td>
<td>MIXED PAPER/CARDBOARD RECYCLING MIXED PAPER/CARDBOARD RECYCLING MIXED PAPER/CARDBOARD RECYCLING</td>
</tr>
<tr>
<td><strong>Cartons</strong></td>
<td>In clear bags</td>
<td>After 2pm but before 4pm</td>
<td>METAL/GLASS/PLASTIC/CARTONS RECYCLING METAL/GLASS/PLASTIC/CARTONS RECYCLING METAL/GLASS/PLASTIC/CARTONS RECYCLING</td>
</tr>
<tr>
<td><strong>Trash</strong></td>
<td>In clear bags</td>
<td>Between 4pm and 12 Midnight the day before*</td>
<td>GARBAGE GARBAGE</td>
</tr>
</tbody>
</table>

*Please note: Material set out after your school has been serviced is not a missed collection.
If you have dumpster or compactor service, your schedule may be different.

Confirm your school's trash collection schedule at: nyc.gov/dsny.
Enter your building address under **Collection Schedule.**
Follow your set out schedule. Report any missed collections to your local DSNY Garage.

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**Zero Waste Schools**

[Logos for NYC Department of Education and other partners]
Research & Data
2017 Composition of Schools Aggregate Discards

35% Recyclables
21% Clean paper, cardboard
14% Metal, glass, plastic, cartons
12% Other materials
0.04% Harmful household products
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0.6% Plastic shopping bags
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29% Food scraps
20% Food-soiled paper
51% Organics suitable for composting
2% Yard waste
12% Other

Note: Totals may not sum exactly due to rounding.
Recycling Achievement

The charts below show the average recycling achievement of NYC schools in 2017. Some schools capture significantly more recyclables and have lower contamination of unwanted materials in recycling collections than others, but the 2017 Study documented that, on average, there is considerable potential to recycle more from school waste.

<table>
<thead>
<tr>
<th>School Recycling Collections</th>
<th>Paper Recycling</th>
<th>MGP Recycling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capture Rate</td>
<td>57.9%</td>
<td>19.4%</td>
</tr>
<tr>
<td>Contamination Rate</td>
<td>17.2%</td>
<td>40.6%</td>
</tr>
</tbody>
</table>
Year Three Report
September 2018
Zero Waste Schools Report: Year 3
DOE-RCP’s Curbside Waste Audit Snapshot
During the spring of each programmatic year, DOE and RCP outreach staff collected weights of all curbside recycling and trash bags for one week to take a snapshot of school waste diversion at ZWS. 15 buildings were chosen as representative sample. The analysis of the data recorded at these 15 buildings shed light on the amount of waste and recycling produced by each school building.

The table and graph shown left depict the average percentage of waste that was diverted away from landfills. There has been a positive trend with time. In 2016, 39.3% of all waste were materials that went to recycling (Paper, MGPC, and Organics) facilities instead of landfills. Comparatively, this increased to 58.5% in spring of 2017 and 63.1% in spring of 2018.