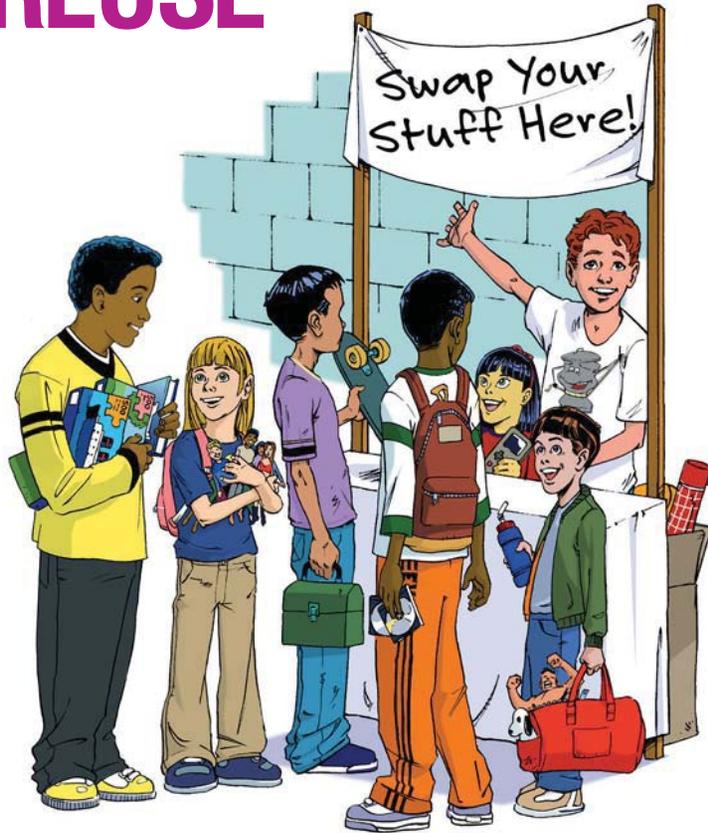


REDUCE & REUSE



Citywide Winner
High School Division
Maspeth High School

2015 GOLDEN APPLE AWARDS

This certificate is awarded with the sincere appreciation and esteem of a grateful Department and City in recognition of your school's efforts to help make New York City shine.



City of New York
Department of Sanitation
Bureau of Recycling and Sustainability
nyc.gov/recycle



2015 Golden Apple Awards Contest Entry Judging Info

(This sheet prepared for judges' use by DSNY BRS)



ID Info: 15026
School: Maspeth High School
Grade Division: HS
Borough: Q
Affiliation: DOE

(for borough Master School Composter)

Cash Prize: \$10,000
Reduce & Reuse Award: Citywide HS & Borough Winner

Golden Shovel Award: yes

Reduce & Reuse project entry

Reaching Forward to Reduce, Reuse, Recycle

Under the guidance of the Green Club, Maspeth HS completed 13 RRR projects this year. They undertook a comprehensive evaluation of the school, city, and country's waste retrieval systems and policies. Their gardening, collection drives, and environmental advocacy projects included: IYEYS Conference participation, student advocacy at City Hall for plastic bag fees, cafeteria waste and organics collection, recycling program advisory lesson, visual arts recycled art project, sustainability poster contest, NWF Green STEM guidebook entry, bottle and can redemption collections, recycling and reuse collection drives, community cleanups, tree giveaways, gardening projects, partner school collaboration, doc day screenings, and digital globe.

Weblink final

http://www1.nyc.gov/assets/dsny/downloads/pdf/golden-apple-awards/GA15_RR_HS_Q_Q585-Maspeth-HS_entry.pdf

School Population: total # 1000

Core Group:	Total Participating:
50	1000

Collaborations

- NYC Organics Collection
- NYC Compost Project
- GrowNYC RCP
- GrowNYC Grow To Learn
- MFTA
- NWF Eco-Schools
- NYRP MillionTreesNY
- NYRP Rose
- Citizens Comm for NYC

Prior Year Entries:

12:TU-boro;13:RR-C;14:TU-boro

Current Entries

15:RR-C,SR-part

School Contact Information:

Phone: 718-803-7100

Address: 54-40 74 St
Maspeth 11373

Block&Lot: 4028030001

DOE Location: Q585

DOE Bldg: Q585

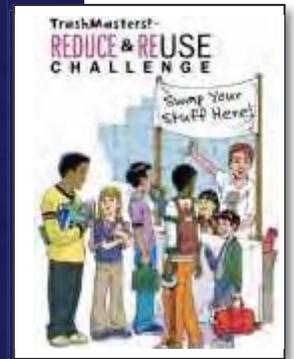
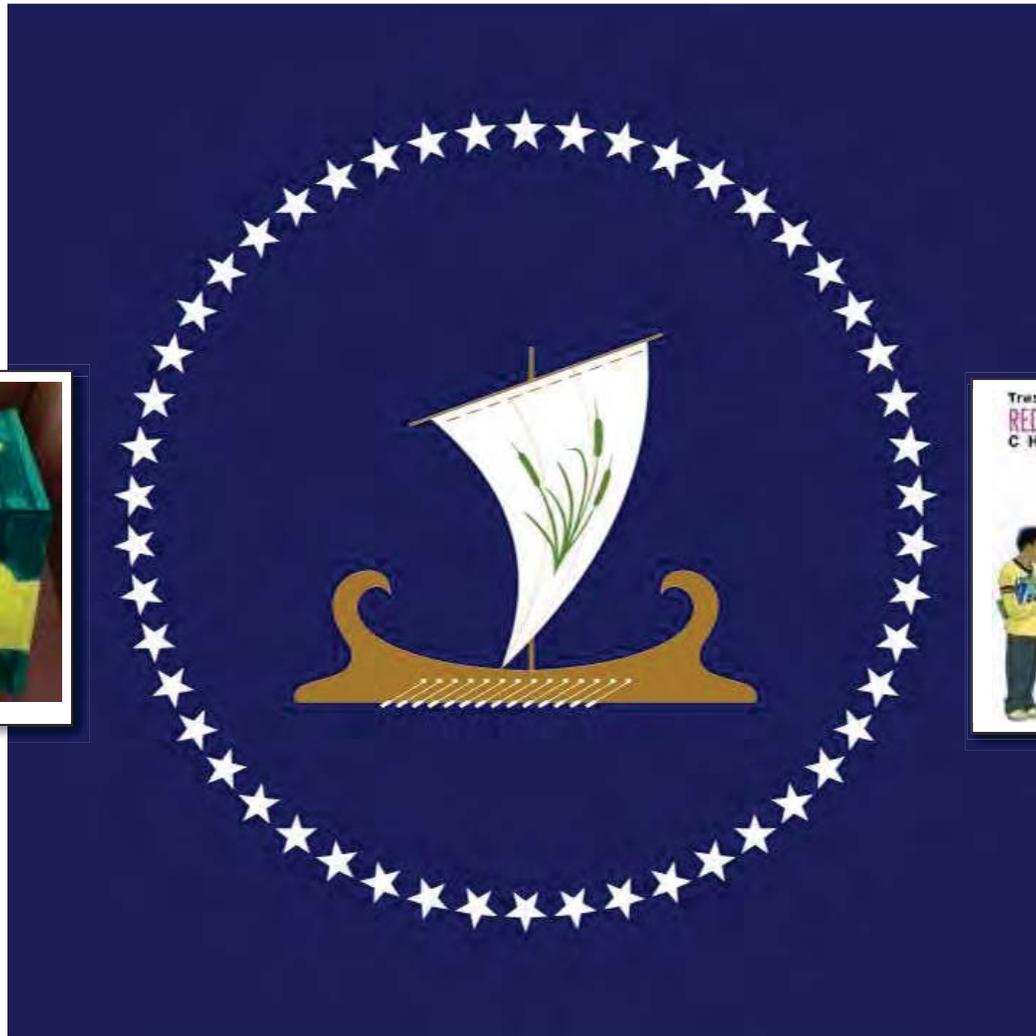
Contest Coordinator: Aaron Bell, advisor

Principal: Khurshid Abdul-Mutakabbir

Sustainability Coord: Aaron Bell

Custodian: STEPHEN SIGL

Reduce and Reuse Challenge: Maspeth High School Green Club



SCHOOL INFO

- School Number: Q585
- Official School Name: Maspeth High School
- Street Address, City, Zip: 54-40 74th Street, Maspeth, New York, 11373
- Phone # 718-803-7100, Fax # 718-803-7105
- Principal: Mr Khurshid Abdul-Mutakabbir, Phone #718-803-7100, kam@maspethhighschool.org
- Contest Coordinator: Aaron Bell, Maspeth High School Green Club Advisor, Biology Teacher, and Sustainability Coordinator 718-803-7100, abell@maspethhighschool.org
- On the Web: www.maspethhighschool.org and www.facebook.com/mhsgreenclub
- School description — See Below

Maspeth High School is the classical high school of New York. It is the first public high school in the Queens community of Maspeth. The school benefits from a state-of-the-art facility constructed under the School Construction Authority's Green Guidelines. This is the school's first year at full capacity with approximately 1000 students in grades 9-12 attending the school. Maspeth High School is one of a select few schools in New York and in the nation that have earned an Eco-Schools USA Green Flag designation. The following is a description of the school.

OVERVIEW

Maspeth is a comprehensive high school that offers a diverse curriculum, many extracurricular activities and sports teams. Our mission is to introduce students to an understanding of the liberal arts and put them on the pathway to becoming lifelong learners with strong character.

COURSES AND PROGRAM HIGHLIGHTS

Extensive Fine Arts program featuring Visual Arts, Music, Dance and Theater; Advisory, Career & College Counseling, Exploratory Learning.

Our instructional model is based on the Greco-Roman Trivium. We emphasize memorization, logic and technical speech. Students at Maspeth High School partake in the following classroom activities:

Socratic Seminar – Students sit in a circle and have an additive dialogue where they use a text (ex. Darwin's [On the Origin of Species](#)) to back up their thought. Students will be assessed on their active listening, locution and organization of facts. Socratic Seminar is used as a summative assessment primarily in many disciplines including English, Shakespearean Theater classes, and Science.

Debate – At MHS we use debate in our History and Civics classes. Students will participate in Team Policy, Parliamentary and Lincoln Douglas style debates as a form of assessment. We adhere to same rules and regulations that are used in competitive debates. In debate, students learn to use technical speech to further their arguments while rebutting the arguments of their competitors.

Declamation – Students at MHS perform 3 declamation pieces per year. A declamation is public recitation of powerful, persuasive and often political speech.

Public Speaking – We strongly encourage public speaking at MHS. At monthly town hall meetings and advisory periods, students are encouraged to speak publicly. Students are routinely assessed on their speaking techniques and delivery. Maspeth trains students to be able to disseminate information using logic and reason and then speak using facts and figures in a public setting.

Hands on Science – The science program at MHS follows this sequence: Biology → Chemistry → Physics → Astronomy. We also offer Earth Science, Research Biology, Research Chemistry, AP Biology, AP Physics B and C and College Astronomy. All of our science classes are 6 or 7 periods per week with hands on laboratory experience in double periods and inquiry work.

CONTEST ENTRY INFO

- Borough: **Queens**
- Grade Division (Elementary, Intermediate, High School): **High School**
- Contest Entry Title (10 words or less): **Maspeth High School Reaches Forward to Reduce, Reuse, and Recycle!**
- Contest Entry Summary (in one short paragraph):

Maspeth High School continues its quest for sustainability with a *Trashmasters Reduce and Reuse* entry in the Department of Sanitation's Golden Apple Award Contest. The school, under the guidance of the Green Club, took a number of strides forward in its projects this year, undertaking a comprehensive evaluation of its own, its city's, and its country's waste retrieval systems and policies. The school used what it learned to focus its efforts on reducing the pounds of trash sent to landfills (or carelessly into pristine environments). Following three successful Golden Apple years, Maspeth Green Clubbers were excited to complete another challenge in 2015. The club thanks the Department of Sanitation for awarding schools the Golden Apple Awards.

STUDENT INVOLVEMENT

- Student Participation: Core Group #: **50**
- Student Participation: Total #: **1000**
- School Population: Total #: **1000**

REDUCE AND REUSE PROJECTS

Project 1: Student Advocacy Day for the Environment

Project 2: Cafeteria Waste and Organics Collection

Project 3: Recycling Program Advisory Lesson

Project 4: Visual Arts Recycled Art Project

Project 5: Sustainability Poster Contest

Project 6: NWF Green STEM Guidebook Entry

Project 7: Bottle and Can Collection

Project 8: Recycling and Reuse Collection Drives

Project 9: Community Cleanups, Tree Giveaways, and Gardening

Project 10: IYEYS Conference Participation

Project 11: Partner School Collaboration

Project 12: Doc Day Screenings

Project 13: Digital Globe

Note: All projects served as important educational opportunities this year and are linked to standards of the New York State Living Environment Curriculum (<http://www.p12.nysed.gov/ciai/mst/pub/livingen.pdf>), the AP Biology Curriculum (http://media.collegeboard.com/digitalServices/pdf/ap/10b_2727_AP_Biology_CF_WEB_110128.pdf) and the Blueprint for Teaching and Learning in Visual Arts (<http://schools.nyc.gov/offices/teachlearn/arts/Blueprints/Vabp2007.pdf>). Please visit "Educational Components" at the end of this document to see how the Maspeth High School projects align to the three curricula.

Project 1: Student Advocacy Day for the Environment

Type of Waste Targeted: Single-use disposable plastic bags.





Implementation

Why this: The Maspeth High School Green Club attended the *Ban The Bag* Conference in 2013 and the *S.T.O.P (Students Take On Plastic) Bags* Conference in 2014, both hosted by the Hewitt School in Manhattan. Each conference focused on lessening the environmental and economic burden of single use plastic bags in New York City by bringing students from all socio-economic backgrounds together to advocate for a plastic bag ban or fee. The young environmentalists spent their time developing strategies and arguments to reduce these environmentally hazardous (and costly) throw-away components of commerce. At the *Student Advocacy Day for the Environment*, held Tuesday, September 16th at City Hall, veteran students of the anti-plastic bag movement joined newcomers to advocate for a ten cent fee on single-use plastic bags in New York. Their purpose was to integrate what they had learned at the two conferences to convince city legislators of the value in restricting the use of plastic bags in America's largest city. Creating a bill for a fee would position New York City as a leader not only in finance, but in responsible management of resources. It would also save the city tons of trash, not to mention money. Without any restriction on the use of plastic bags, the city is forced to spend \$10 million dollars to transport the 100,000 tons that 5.2 billion plastic bags collectively weigh to landfills. Sadly, no matter the print that appears on these thin sheets of polyethylene, single-use bags are not considered viable recyclables. If they do make their way to recycling plants rather than blow off trucks into the wind and into nature, they clog expensive machinery and contaminate hard plastic recyclables.

What we did: The club members took the subway from Queens to City Hall. In a downpour, the Maspeth Green Clubbers were ushered into the building to take part in a press conference for the event. Jia Chen and Iris Chen, both senior officers in the club and veterans of the *Ban the Bag* and *S.T.O.P. Bags* Conferences, were chosen to speak in front of the cameras and microphones. They stood side-by-side with a group of like-minded students from both public and private schools in New York. Jennie Romer, coordinator of the Bag It NYC Coalition and founder of plasticbaglaws.org, spoke at the press conference, as did Councilman Brad Lander, who co-authored the plastic bag bill.

Following the press conference, Maspeth students joined approximately one hundred students from other New York schools on the steps of the Hall to participate in a brief rally supporting the passage of a plastic bag bill. They held up signs they had made for the event. They then split into six mixed-school groups and walked across the street to the City Council legislative offices. Each group received a folder of materials provided by Ya-Ting Liu, the director of the New York City Sustainability Program. In the folder was a schedule of meetings, information about the Council Members on the meeting slate, their current stance on the bill, statistics related to the plastic bag problem and a summary of the proposed bill. The student teams, led by an adult chaperone or two, met with each Council Member for approximately 20 minutes. In the course of the four scheduled meetings, students shared their viewpoints about plastic bags, engaged in a dialogue with Council Members or their staff, and filled out the following:

1. Please list all the participants in the meeting (name, title, contact info) or attach business card.
2. Is the Council Member supporting the Plastic Bag Legislation? Why or why not?
3. Will the Council Member join the BYOBag week challenge?

After the meeting period, the Green Clubbers reconvened in a park next to the legislative office building before having lunch and heading home. We discussed the event the following Wednesday afternoon at a Green Club meeting.

Project planning: Joan Wolf, Hewitt teacher and organizer of *Ban the Bag and S.T.O.P. Bags*, notified me about the event. Ya-Ting Liu, the director of the NYC Sustainability Program, helped the group register, kept the club updated about the logistics of the day, and welcomed the students at City Hall. She also prepared the literature for the students to familiarize themselves with the plastic bag legislation. Jennie Romer and Councilmember Brad Lander were instrumental in providing a positive message at the press conference. Both met with the students to congratulate them on their presence and to encourage them to seek change.



Green Club President Iris Chen and Vice President Jia Chen spoke to the media at *Student Advocacy Day*

I wrote an email to club members with the following message:

Remember these things about tomorrow:

- 1) We leave the school at 7:30AM and will likely be on the R train at the Grand Avenue stop at 7:40AM-7:45AM.
- 2) You must have your permission slip signed and turned in to take part.
- 3) Dress is business casual (avoid sneakers and jeans) - please dress for success (i.e. ties/belts for young men) as we'll be meeting some important Council Members.
- 4) Please read the attached PDFs tonight to educate yourself about the issue.
- 5) You must bring a photo ID (school ID is fine) - We must go through security at City Hall.
- 6) Please bring money for lunch.
- 7) Feel free to make a poster tonight for tomorrow's rally. We will have the Maspeth High School banner and Green Flag too.
- 8) Be ready to practice your public speaking skills. Let's all bring a positive message!

Schedule at City Hall:

9AM-10AM: Rally with other students.

10AM-12PM - You will be placed into one of six teams to meet with Council Members. Each team will attend four meetings and will have members of multiple schools. Expect to be assigned to a team randomly.

As always, I'm proud of you guys. I look forward to seeing you early tomorrow! Mr. Bell

Student involvement: Twenty students from all four grades attended the field trip to City Hall. All were instrumental in sharing their youth perspective with the City Council members, many of whom were undecided about the bill on *Student Advocacy Day*. Club president Iris Chen gave interviews to Chinese-language news stations in front of the marble steps. Vice president Jia Chen delivered a statement with confidence and poise at the press conference. Sophomore Anny Delgado also conducted a television interview.

Promotion: The September event was scheduled just after the start of school. I promoted the event (and the club) to incoming freshmen at the Maspeth High School club fair (held annually). Three freshmen joined seventeen upperclassmen, getting an early start on advocacy and immediately fulfilling the Maspeth High School mission for students to be participants in citizenship. *Student Advocacy Day* was publicized on the web through various environmental and news organizations. Registering for the event was an online process, as shown here:



I posted the event info to the Maspeth High School Green Club Facebook page (www.facebook.com/mhsgreenclub).

Collaboration: *Student Advocacy Day for the Environment* was a total team effort. Students from Maspeth combined forces with students from a number of other schools, with the Brooklyn New School, MS51K under Jody Reiss' watch, and the Hewitt School particularly well represented. I was pleased to see middle school students and high school students from diverse backgrounds on each team. The support and guidance of Jennie Romer and Brad Lander gave the Green Clubbers the confidence they needed to meet with city lawmakers.

Analysis

What Worked: The event was a success in multiple ways. It allowed young people to see that even before they reach voting age, they have the ability to influence public policy. Students were able to develop their arguments and share their ideas in two impressive settings: City Hall and the City Council Legislative Offices. Many of the Council Members accepted students into their offices (and busy schedules) with grace. Many of those that remained undecided on the issue patiently heard the students deliver their message and offered useful feedback. Lulu Zhou,

who was awarded the runner-up prize in the public speaking contest at *Ban the Bag*, was accepted to Middlebury College in part because of her participation in *Student Advocacy Day* and the skill with which she spoke about her concerns. At Middlebury, Lulu will pursue her interest in environmental science and policy at one of America's leading academic and environmental institutions. For me, the most rewarding aspect of the event was seeing young people interact, articulate, and learn.

Here is an article written in *Capital*:

Students lobby for plastic bag fees

By David Giambusso

12:35 p.m. | Sep. 16, 2014

More than 100 middle school and high school students gathered at City Hall this morning to urge on-the-fence council members to support a 10 cent fee on plastic bags.

"Plastic bags cost way too much money," Micah Abrams-Tweed, a student at Brooklyn New School told a room full of students, reporters, advocates and council members in City Hall's red room. "They cost New York City \$10 million just to bring to the landfill."

The bill, Intro 209, is co-sponsored by Brad Lander and Margaret Chin, and has the support of roughly half of the Council. It needs about half a dozen additional votes to pass, and after the press conference, the students headed across the street to lobby members in their offices.

"As powerful as your words were in this room, they will matter much more across the street," Lander said as he and advocates from the New York League of Conservation Voters, the Natural Resources Defense Council, and Plastic Bags Law led the children across Broadway to meet with 23 council members.

"Six more votes! Six more votes!" the children chanted as they marched toward the Council offices.

According to information provided by City Hall, New Yorkers use 5.2 billion bags annually or 624 per person per year. More than 140 cities and towns have enacted similar legislation, including Los Angeles, Washington D.C., San Francisco and Honolulu. Fees and bans have reduced consumption of plastic bags by 60 to 95 percent, city officials said.

In July, [deputy mayor Tony Shorris said](#) the mayor's office was "looking very closely" at the bag fee, but stopped short of a full endorsement.

The bill is expected to be voted out of the Council's sanitation committee later this month or early October.

What Didn't Work: I was disappointed that a number of City Council Members were not able to attend the scheduled meetings. They sent staff aides instead. For some students, this diluted the importance of the occasion. Sadly, a resolution has yet to pass (it was introduced in the spring as Intro 209-2014), which for some would be a sign of failure. Hearings on the issue have been postponed, as has voting on the bill. In a city with the organizational complexity and demands of New York, such delays are the status quo but not a signal of defeat. It is the Green Club's hope that New Yorkers will soon have a fee on plastic bags in this beautiful city; environmental and economic relief will follow.

Applicability to other Schools: Public and private schools united on *Student Advocacy Day*. Any school can spark student advocacy by forming a Green Club or similar organization. At Maspeth, a school in just its fourth year of existence, there are nevertheless students that have participated in environmental projects for all four years. They

have gradually become more capable public speakers, more discerning environmentalists, and more prepared citizens in a world where New York's plastic bag problem is just the beginning.

Measuring Success: Most importantly, students from across the city were provided the opportunity to formulate and share their views about one of the most pressing environmental issues of our time. The delay in passing a bill only strengthens the requirement for students to share their ideas and stick to it. Students from all over New York witnessed the power they can have when they unite on the environment. The Maspeth students wrote a letter to Council Members following *Student Advocacy Day*. This is perhaps the greatest success of the project. It allowed students to frame an argument, practice their persuasive writing skills, and best of all, participate in citizenship.

Dear Council Members,

We appreciate having the chance to present our advocacy towards putting a fee on plastic bags. It was an honor to attend and speak at the brief but impactful meetings. It was truly a great experience to be able to share our ideas with such prominent people and have the opportunity to influence society positively with our voices. Through physical eyes, we might be perceived as young students who can't influence the political sphere, but with enough ambition and passion for change, our love for the environment can cause a great revolution in society. As mentioned through numerous meetings, a plastic bag fee would have societal, economic, and especially environmental benefits. Humans are intertwined with marine and terrestrial wildlife in this one big world where plastic bags are steadily accumulating. Not only do they destroy but they also waste money. The money used on manufacturing and "cleaning up" these non-biodegradable killers could be used on more urgent matters. People become way too dependent on these bags which, without intervention, will have an even larger demand in the future. Bad habits form as people just toss these bags out when their uses are up. These bags are left to pile up collectively as harmful and toxic trash forever. We ask you to not be apathetic on this issue and to have an open mind on things that benefit one and all. Let us start saving the world before it's too late. Let us change lifestyles and follow other cities that have banned or placed fees on plastic bags. Let us give New York City a reputation of being the business capital of the world with an eco-mind. The Maspeth High School Green Club hopes the bill passes with more prominent changes in the future. Thank you and let's walk on the path of protecting our planet and people!

Sincerely, the Maspeth High School Green Club



Project 2: Cafeteria Waste and Organics Collection

Type of Waste Targeted: Cafeteria waste including consumable liquids, recyclable (hard plastic and metal) containers, food and other biodegradable wastes.



Above: A Maspeth student disposing of waste in one of the cafeteria's two waste stations.



Below: Organics are sent to a special composting facility. The landfill was is greatly reduced.



Below: The organics bins received a plexiglass lid to reduce contamination. Recyclables and trays street side.



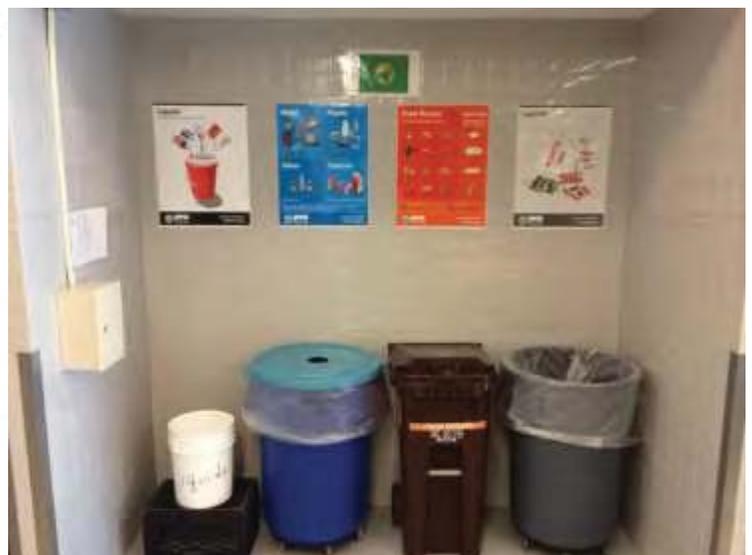
Implementation

Why this: For its first three years, Maspeth’s cafeteria waste disposal method was a glaring weakness in a school that had a relatively well-oiled recycling machine in its classrooms and hallways. The cafeteria generated by far the most waste at the school, and all of it went to landfills. Styrofoam, sporks, napkins, food waste (including liquids), milk cartons, plastic food containers, bottles, soft plastic packaging and more were dumped indiscriminately into the many trash containers spread throughout the cafeteria. Blue recycling bins existed, but many students took the easy route by throwing out their trash without separation into the closest gray trash receptacle. By day’s end, dozens of large plastic trash bags were filled with unsorted lunch debris. These messy bags went curbside for collection and then on to landfills. The Green Club thought that such a state of affairs in the cafeteria was unacceptable. Food waste and napkins are biodegradable – the club knew these materials added unnecessary pounds and costs to waste collection efforts. Rather than be transported great distances to rot in landfills, it could be turned into rich compost and reused, preferably on city streets and parks. Recyclables could likewise be returned to service. The weight of liquids could be subtracted from the waste stream by pouring unconsumed liquids into buckets and then easily down the drain. By sorting cafeteria waste, the school could take a serious leap toward sustainability and live up to its Eco-Schools USA Green Flag designation.

What we did: The Green Club requested to be included in the Department of Sanitation’s Organics Collection Pilot, which started in Manhattan and Brooklyn. The school was lucky to be included when the program reached the Queens neighborhoods of Maspeth and Middle Village. Upon selection in the pilot, the school received a number of brown organics collection bins and colorful posters depicting the separate containers for cafeteria waste.



The Green Club designed and installed two cafeteria waste stations. They chose two inset areas of the cafeteria to create an orderly yet unobtrusive drop-off zone for students. The club decided on this left-to-right order: liquid bucket, blue recyclable bin, brown organics bin, gray trash bin. This differed slightly from the suggested station which appears with the initial Maspeth layout here:



Green Clubbers Senahida Halilovic and Daisy Codallos-Silva spent an afternoon carefully spacing and taping the large posters to the wall behind their corresponding receptacles. They made sure that the posters were high enough to avoid being in a splash zone for foods and liquids. Phil, an amazing custodian at our school who once built the housing for an aquarium, created specialized container tops for the blue bin by cutting a circular hole out of a store-bought trash lid. He then painted the tops blue to match their containers.

The organics collection effort started not at the beginning of the school year but about a month later. At Maspeth, students in the same grade level eat together during a common lunch period. Freshmen have a fourth period lunch, sophomores a fifth period lunch, juniors eat sixth period, and seniors eat seventh period. Green Club student volunteers from each grade level agreed to stand at the stations in the early going to instruct their peers about how to sort and dispense common cafeteria waste. It was their job to rid classmates of poor behaviors that had unfortunately been habituated in the old system. Students in the cafeteria now had to walk to the waste stations rather than having quick access to an all-in-one trash container. Once at the waste station, students had to properly sort their waste, pouring liquids into the bucket, placing hard plastic recyclables and cartons in the blue bin, placing food and paper waste in the organics bin, and placing landfill waste in the gray trash bin.

From its inception, the new system in place was a game-changer. With adult supervision and follow-through, the number of bags sent to the street was drastically lowered. As one member of the cafeteria staff told me, sometimes the bag number was reduced by 75%!

Modifications were made as needed. Even before the project was implemented it was agreed upon to have containers be two-deep to allow them to be alternated during a single lunch period if necessary. Stephen Sigler, the head custodian at Maspeth, created a system where the blue bins (the only ones without rollers built in) were placed together on a platform with wheels. When one was full, the platform could be swiveled easily mid-lunch period. The Green Club placed laminated placards beneath the posters with the names of the most common items that belonged in each container to make it easier for students to sort items. Under the blue bin's poster they included: milk cartons, bottles, cans, sporks, hard plastic containers, plastic cups. Above the liquid bucket they placed a sign that read: Liquids Only! When plastics continued to contaminate the brown bins, the club created a new sign: No Plastic! The Green Club added a "Tray Stacking" station just after the pilot started to condense the Styrofoam trays before bagging. This brought a huge reduction in the quantity of bags needed for Maspeth's waste.



Phil devised a better solution only last week to combat plastic contamination in the brown bins, which before unfortunately had the widest openings. Careless or wasteful students would see the large container's mouth and take aim, seriously hampering the project's success. Phil created a clear plexiglass cover with a slot (rounded in the middle) for the organics bins to prevent students from dropping Styrofoam trays and miscellaneous plastic into the wrong place.

The organics collection pilot is an ongoing and challenging experiment at our school. It is far from perfect but its very infrastructure is built to inform students who will be charged with policy decisions in the near future. Even better, the infrastructure is built to reduce the school's landfill contribution.

Project planning: I joined Arlene Buoninfante, Maspeth's School Food Service Manager, and Stephen Sigler, the school's head custodian, in September to brainstorm ideas for the organics collection pilot's installation and ongoing implementation. We decided to go with two in-sight waste stations at the front of the cafeteria (rather than include others in corners of the cafeteria) to ensure that staff members entrusted to perform cafeteria duty could monitor the stations and guide students when required. We chose the locations (in the recessed portion of the wall) to have a streamlined drop-off site for each half of the cafeteria.

I sent out this email just after the program began:

Hi all,

As many of you know, the cafeteria waste program underwent an overhaul at MHS, with today marking the first day of organics collection. We are part of a pilot program of 400 DOE schools and compliance on this matter is crucial. Thank you to the lunch room monitors who dedicated their time today helping students place liquids, recyclables, food scraps, and trash in the appropriate containers. Thanks as well to the cafeteria staff and custodial staff for helping the Green Club organize the two waste stations.

If you didn't get a chance to stop by the cafeteria today to see the new setup, I encourage you to do so. Students finishing lunch will no longer throw everything into garbage pales. In the past, all lunch waste was placed curbside for Department of Sanitation pick up a few days per week. Failing to remove recyclables and organics (liquids and food scraps) from the waste stream was not only environmentally irresponsible, but costly as well, as plastic was consumed to bag the waste and fossil fuels consumed to ship it out of state. Our current setup lowers our school costs and our ecological footprint.

Here are some thoughts regarding our rollout:

A. Students were for the most part intrigued by the program and seemed willing to comply. Some complained about the "amount of work" it required. Please remind students about the benefits of this program and show them how quick it is to do the right thing.

B. A number of students threw plastic in the organics bin (the brown bin) because the plastic contained food. It is essential that we have students remove their leftover food from wrappers before it enters these bins. Contamination will jeopardize our standing in the recycling program and could result in a citation.

C. When teachers stood next to the waste stations to actively aid students, contamination was minimized. When students did not have an adult next to a waste station, or were left to dump their trays without help, waste was incorrectly mixed. Please don't be afraid to stop students and guide them through the process.

D. Milk cartons, bottles, and hard plastic (sandwich containers, plasticware) belong in the blue bins. Paper products belong with food scraps in the brown bin. Styrofoam and wrappers should be placed in the "landfill" gray bins.

If you have cafeteria duty, please ensure that at least one adult is next to each station to ensure that we are meeting our recycling goals. Each container has a poster behind it that demonstrates where each item students receive for lunch should go. This week is crucial in setting the right mindset for our students. Past failures or issues in the cafeteria can be quickly erased with our encouragement and I look forward to a cleaner, greener Maspeth High School.

By working together, we can truly uphold our core values of "truth, goodness, and beauty." Thanks for reading this email and for your help in the school's recycling program (in your classroom too). Please let me know if you have any questions. I have attached a picture of one of the cafeteria stations - students should be encouraged to move from left to right.

Best,
Aaron Bell
Maspeth High School Sustainability Coordinator and Green Club Advisor

In early February, Mario Matos, one of the two Assistant Principals at the school and a strong supporter of the Green Club's sustainability efforts, organized a recycling meeting for the adult stewards of the cafeteria space. This was the perfect time to review the school's recycling goals and to discuss deficiencies as we entered a new semester. Gwenddyn Edwards, Unit Coordinator at Q721, the D75 school that shares the building with Maspeth High School was on hand, as were Ms. Buoninfante, Mr. Sigler, and all the teachers projected to have cafeteria duty. At the meeting, we openly discussed what we were doing and what we could be doing better. A number of the modifications teachers suggested that day were made a reality (increased adult presence, plexiglass for the brown bins). Some were wonderful ideas but could not be acquired for the school for legal or financial reasons. They included spork dispensers, a paper-based replacement for Styrofoam trays (Styrofoam will be banned in New York next year), and napkin dispensers. For hygienic reasons, plasticware must be individually wrapped in plastic.

The meeting participants reviewed the school's recycling goals together and then completed this table:

Positive Aspects	Areas in Need of Improvement	Steps for Improvement

Student involvement: Every student at Maspeth High School has been involved in this project, placing the school's reduce and reuse project participation at 100% of 1000 students. It is an epic project. A significant number of Green Clubbers have assisted the school as cafeteria helpers to guide their peers. D75 students have taken a lead role.

Promotion: The large color posters that are part of the waste collection stations in the cafeteria promote the program to everyone in the cafeteria. They are wonderful visual aids with clear depictions of common school lunch waste. The “Landfill” label over the trash containers is helpful as it clearly designates the final stop for items placed there. When lunch periods have particularly good results or compliance, I write about it on the Maspeth High School Green Club’s Facebook page. Such positive news is then shared on the Maspeth High School Facebook page which has nearly 1,500 likes. The Green Club logo, which features a globe with the words, “We Can Make a World of Difference” is positioned above each station. It is my hope that this will help students understand the student-led side of the waste collection system. The organics collection pilot is far from a directive from New York City authorities. It is a Green Club supported and executed project that has profound benefits for the school and the environment.

Collaboration: The cafeteria waste collection efforts require contributions from a number of interconnected teams. The custodial team is charged with curb disposal and cleanup. The cafeteria staff is charged with food delivery, packaging choices, and initial waste collection (ex. tying bags). Students are most important as it is they who must adhere to the guidelines marked at the waste stations. The system is only as effective as their choices. The District 75 teachers and staff must develop strategies for their special needs learners to learn how to recycle properly.

Gwen Edwards and Beth Rudolph of Q721 were hugely helpful in activating the program. They met with me on a number of occasions to go over best practices and to get their special needs D75 learners involved. Q721 students were assigned as cafeteria helpers to give them a glimpse of a real-world work environment. Verbal students were given cards to facilitate conversation with Maspeth students. Nonverbal students were given visual flash cards to use to help sort the cafeteria waste. Some teams worked on freeing bins of contaminants.



Analysis

What Worked: The shift in policy and practice that was heralded in with the organics program has been significant at our school. Students at Maspeth are now more astute with their waste, understanding that it doesn’t simply “go away” when they throw it away. Rather, cafeteria waste has a life beyond the lunch period; organics are ideally sent to composting facilities, and hard plastics and metals to recycling facilities. Many students came up to me to say that because they were sorting waste at school, home recycling became easier. Even on days when noncompliance is an issue, we halve the number of bags of trash sent to the street.

What Didn’t Work: Following the rollout, I received warm and cool feedback from the Green Clubbers and teachers assigned to cafeteria duty. It appeared that most students were compliant but that some would purposefully or unknowingly throw incorrect items into bins. This helped to inspire the recycling program advisory lesson (see next project). Other students, remembering how easy it was in the old system, complained it was “so much work” to sort waste. This sentiment faded as students got accustomed to the new system. I was surprised at the pushback

from adults more than I was by the pushback from kids. Many staff members assigned to cafeteria duty as a C6 were reluctant to oversee the stations or intervene when students contaminated the bins, preferring instead to sit passively through the period, often away from the action. Environmentally-minded teachers, seeing the vast reduction in waste that could be achieved in the cafeteria with their support, helped educate students in an ongoing and helpful way. Without clear and consistent authority from all adults in the room, however, compliance issues will likely persist. On days with active participation from adults on cafeteria duty, students themselves become active attendants of the cafeteria, keeping their tables clear and clean and sorting their waste properly. When adults refuse to model good behavior, poor results ensue.

It was disappointing to read that New York City schools had such high contamination in the brown organics bins that the Peninsula Composting Group's processing facility in Delaware was forced to shut down (see <http://www.wnyc.org/story/rotten-luck-nycs-pilot-compost-program-trouble-shutdown-delaware-processor/>). We continued to separate waste in the cafeteria whether it was destined for similar facilities or for landfills with the knowledge that we were building strong habits in Maspeth students and reducing the volume of trash and number of plastic bags. Unsorted Styrofoam trays with food waste and other materials on them quickly fill up a trash bin.

Applicability to other Schools: More and more schools will be configuring their cafeterias to resemble Maspeth's as they are signed up for the DSNY Organics Collection program. All schools can use our successes and obstacles as a lesson for cafeteria management. The school is considering reducing its stations to one next year as there are seldom line backups. If students are taught to bring their waste up immediately after finishing lunch (but before the end of the period), the system is efficient. Starting a school year with the bins in place on the first day is ideal.

Measuring Success: In many ways, the obstacles encountered at the school provide the greatest potential for success. Some shortcomings have already been remedied, as was the case with the plexiglass tops for the organics bins. Others are more systemic failures that require more top-down handling. Styrofoam, though cheap, is easily broken into small and light plastic pieces that seem to saturate New York City. Even Styrofoam that is properly disposed of can easily go airborne off collection trucks. The club members have noticed this renegade Styrofoam during their cleanup efforts. It is splendid that Styrofoam's use will be restricted in New York next year. By switching to compostable paper trays, schools will divert more materials from landfills while seeing waste reused in the form of fresh compost (hopefully contaminant free!) For a cafeteria program to be successful, everyone must be on board, from cafeteria staff to teacher monitors to students. In my experience, students follow the precedent of adults - if adults show concern for the environment through their actions, students are more likely to do the same. Custodial support and administrative support are of course important too. My ultimate goal is to have Maspeth's waste fully separated and contaminant free. On certain days, this is already a reality, even if it requires me to wear a lab apron and gloves to correct some mistakes. For next year, I would like to develop a more standard set of guidelines for the teachers' C6 period to outline cafeteria responsibilities. The freshmen have better practices because they started their high school careers with the pilot program. The seniors, with three years of bad habits behind them, are less compliant. But success is measured in images like the one below! A single lunch period might only fill a quarter of a plastic bag for each container!



Project 3: Recycling Program Advisory Lesson

Type of Waste Targeted: Classroom waste including recyclable paper, cardboard, plastic, and metal. Cafeteria waste.



Most Common Mistakes:

1. Putting **plastic** and **cartons** in the **brown bin**.
 - The brown bin must be plastic free!
2. Putting **soft plastic** like wrappers and coverings in the **blue bin**.
 - Soft plastic goes in the **trash**.
 - Only hard plastics are **recyclable**.
3. Not stacking **trays** properly at the end.



Above: The PowerPoint incorporated images and text to clarify the school's recycling program.



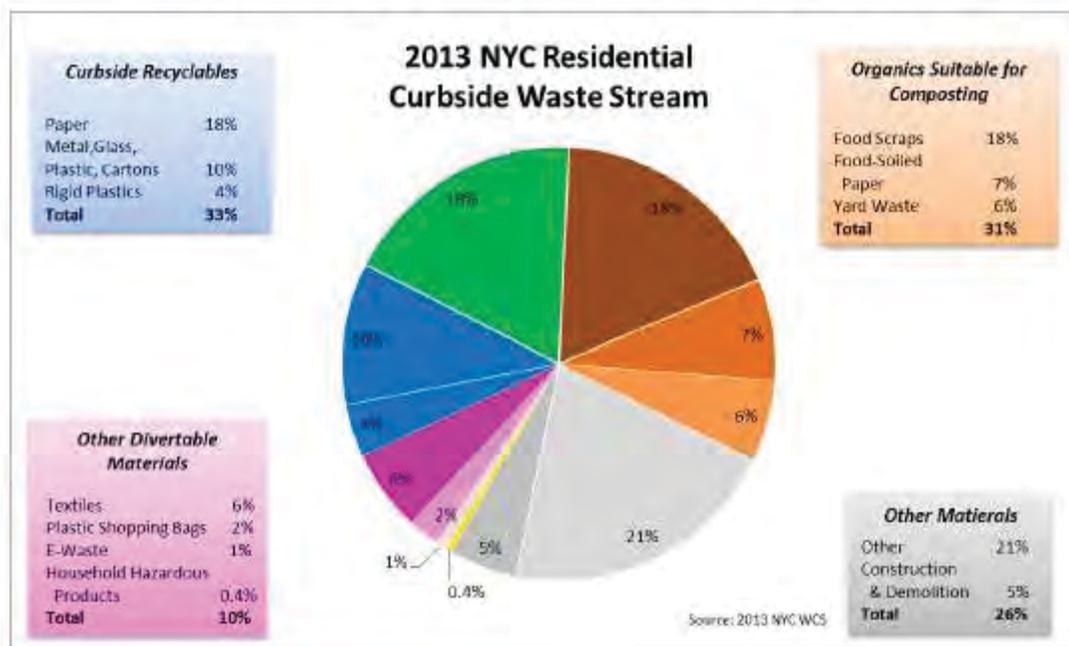
Above: Animations and games provided interactivity and fun to the advisory lesson.

Implementation

Why this: Maspeth’s classrooms have had green and blue recycling bins from the start. The Green Club constructed box tops with labels for both bins but noticed that many students weren’t educated about their use. With the entrance of a new class at the school, and the initiation of the Organics Collection Pilot, the Green Club developed a PowerPoint to be delivered to all Maspeth students during a special advisory lesson for one of the school’s “B Days.” On B-days, students have nine periods rather than eight. Ninth period advisory lessons are adapted to fit the needs of the school. One advisory period might be devoted to bullying prevention, another to time management, and yet another to school policies and dress code. The chance for the Green Club to reach a school-wide audience was priceless.

What we did: The club collaborated in creating a fully-illustrated, animated, and interactive PowerPoint to be delivered to the Maspeth student body. The process started in the fall. The Green Club used numerous Wednesday meetings in September and October to discuss the state of the recycling program at the school. Much of the time was spent outlining problem areas in the cafeteria at the new waste collection stations. Students also discussed what would improve compliance of recyclable materials in classrooms. The Green Clubbers examined literature that had statistics of recycling at New York City schools, including the DSNY Waste Report titled, “Local Law 77 of 2013 Organics Collection Pilot Program Report, through March 2014.” This document was submitted to Mayor Bill de Blasio by New York City Department of Sanitation Commissioner Kathryn Garcia. It can be read here: <http://www1.nyc.gov/assets/dsny/downloads/pdf/studies-and-reports/OrganicsCollection-LL77-DiversionReportI-2014.pdf> Of particular interest was just *how much* school waste could be diverted from landfills using careful planning and action. This is indicated in the pie graph that is part of the DSNY diversion report.

Figure 3: Composition of Residential Waste in NYC, 2013 Residential Waste Characterization Study



The Green Clubbers were determined to create an advisory lesson that would be accessible, professional, and educational. They were inspired by the resources available on DSNY’s NYC Waste Less website, especially those related to schools (<http://www1.nyc.gov/site/dsny/recycling-and-garbage/schools.page>). Before creating the PowerPoint, the Green Club reviewed its old recycling goals and reconfigured them to be more direct. This is what they came up with:

- 1) Having recycling containers available throughout the school.
- 2) Making sure students and staff know where to place common recyclables, organics, and trash.
- 3) Avoiding contamination (incorrect items) in the containers.
- 4) Separating and collecting waste properly for pickup.
- 5) Reducing our waste by recycling in classrooms AND in shared spaces like the cafeteria, auditorium, library, and hallways.

The final PowerPoint tackled all of the revised goals. The final version had 52 slides which identified best practices in classrooms and shared spaces including the cafeteria. It also highlighted the environmental damage that results from poor practices. Many of the slides had animations which allowed students to visualize “right” and “wrong” recycling practices. One slide had students see how to line up trays properly on the tray stacking desk.



Other slides indicated the most common mistakes as well as the most helpful tips to make a difference. The PowerPoint concluded with a link to the NYC WasteLess Game (http://www.nyc.gov/html/nycwasteless/html/resources/promo_recyclinggame.shtml).

Project planning: The Green Clubbers spent a Wednesday afternoon looking up statistics that could be included in the PowerPoint. They sent useful web links to me, along with statistics related to New York City and national waste management. They found an EPA Region 2 webinar titled, “Reducing Waste in Schools: Cafeteria Waste Stations” (http://www.epa.gov/region2/webinars/cafe_waste.html). On Sierra Club pages they discovered that New York recycles just 17% of its waste, half of what could be. 12,000 tons of trash are generated per day, meaning on average New Yorkers produce three pounds of trash per person per day. 7.5% of the trash is single-use plastic bags, which reiterates the need for legislation on that issue. On GrowNYC.org the Green Clubbers discovered that 70% of the solid waste worldwide is produced in the United States, with 80% of American products used once and thrown away. An astonishing 43% of municipal waste is packaging.

Student involvement: The whole student body was able to receive the advisory lesson from Maspeth teachers. Green Clubbers were trained to assist the teachers deliver the PowerPoint; they used the recycling bins, box tops, and signage in the rooms as props. Ms. Marshall delivered the PowerPoint to one group in which a student stated, “Wow, it’s so professional!”

Promotion: The PowerPoint was a promotion of both the Green Club’s efforts and of the schools core values of “truth, goodness, and beauty.” Some students were horrified to see where errant plastic ends up, like in the digestive systems of seabirds like the albatross.

Collaboration: Andrea Dunca and Matthew Coleman, both on the school’s advisory committee, met with me to formalize the advisory lesson and to upload it to the Maspeth Google Drive. Mr. Eric Young, one of the school’s theater teachers, was passionate about helping out and offered advice not only for the PowerPoint but for the cafeteria waste stations.

Analysis

What Worked: The day after the recycling advisory lesson, students that came up to the cafeteria waste stations paused before dropping items in, often stating, “wait this goes here.” This showed they were applying what they had learned in the advisory lesson. Many staff members told me they enjoyed delivering the PowerPoint. The lesson

facilitated a lot of questions and comments about the environment. Recycling compliance in the classrooms was bolstered.

What Didn't Work: Some teachers did not pace the PowerPoint to match the time allotted for the lesson. This meant that students in some advisory groups did not have a chance to play the recycling game at the end.

Applicability to other Schools: I would be happy to share the PowerPoint with any school that wants to improve its recycling practices. Please email me at abell@maspethhighschool.org

Measuring Success: The PowerPoint's main goal was to get students talking about the benefits of recycling and to educate them about how to best recycle in the school setting. The advisory period was a useful time to reach everyone without the loss of message that can sometimes happen in large gatherings (i.e. in the auditorium or cafeteria). The PowerPoint came prepackaged with discussion points. By allowing students to comment and share their opinions, a small advisory session involves students more than an assembly would. When students told me, "I recycle at home now!" I knew the message had been successfully delivered.

Project 4: Visual Arts Recycled Art Project

*** Project 4 was written by first-year visual arts teacher Adam Gordon. He conceived and implemented the project. ***

Type of Waste Targeted: Cardboard and paper.



Implementation

Why this: Our school recycles a lot of cardboard, but apart from the box tops used by the Green Club on the recycling bins in classrooms, we rarely reuse cardboard. Also, our Visual Arts department uses non-reusable materials, such as canvases, instead of tapping into reusable, free resources such as cardboard. For this project, students used only recycled cardboard to create self-portraits.

What we did: The goal for the project was for students to create a self-portrait using cardboard layers to create depth in their face. Students practiced cutting, gluing, and layering cardboard with a small ‘tech’ project before they proceeded to their final portrait. Students first made a small drawing and had to extrude the 2D image by planning out how various layers would be cut out to create depth. During this exercise, students were also photographed for the portrait project. After the tech exercises were completed and peer assessed, students began planning out the different layers necessary for their portrait.

Project planning: Mr. Adam Gordon, an 11th and 12th grade visual arts teacher at Maspeth High School, conceived this project. The idea behind the project was to use only recycled materials and create a portrait in a non-traditional way; by created a “2D” portrait with depth instead of through drawing. Through collaboration with other faculty and custodial staff, the project resulted in an array of unique and engaging self-portraits of students. The project was a first of its kind in the Visual Arts department as MHS and will hopefully spur future eco-friendly projects that promote sustainability, particularly in waste prevention and through reuse of materials. The Visual Arts department reached out to the custodial staff to direct any recycled cardboard to the art rooms. Additionally, we contacted other faculty to solicit donations when they had excess cardboard on hand.

Student involvement: 11th Grade visual art students helped collect and cut down the cardboard as the donations began coming in. Students peer assessed and self-assessed their progress during the tech project, in order to prepare and hone their skills using utility knives and striving for accuracy and detail. Also, the school’s Art Club created displays for the work around the school.



Promotion: Although this was a class assignment, exemplary projects were submitted to a number of arts competitions. One student in particular, Green Club member Brandon Seda, won a very prestigious award after winning the P.S. Art Competition, a citywide art competition of all public high schools in New York City. His work will be displayed at the Metropolitan Museum of Art. Student work was also displayed in different locations around the building where the arts department exhibits student work.

Collaboration: We reached out to the custodial staff to coordinate moving recyclable cardboard into the art rooms. Also, faculty members were generous in directing discarded boxes to our rooms. We reached out to Aaron Bell, the Green Club advisor, to promote the project.

Analysis

What Worked: Students who struggled with drawing found an alternative method of creating a self-portrait and many were impressed with the outcomes of the project. Students generally found success with the project and were keen to use a material they never dreamed of using in a visual arts class. The school faculty and students and administration were excited to watch the project develop and eventually see the final results on display for the public.

What Didn't Work: Teaching students how to layer the cardboard in a way that reflected depth and required meticulous pre-planning was very difficult. Often, students had to go back and rework or modify their portraits to fix any errors. Also, we found out that not all cardboard is created equal. Some are thicker and difficult to cut through and create detail with. Other types were too flimsy and soft to really create depth in the portraits. Lastly, the project requires fine motor skills, so it will need to be modified significantly to accommodate students with special needs.

Applicability to other Schools: This project is easy to replicate, but requires some preplanning to obtain the cardboard material. Teachers just need to make sure they contact custodial staff and faculty in order to direct cardboard material to the art rooms. Also, the project materials and process could be easily modified to fit whatever is the teacher wants to focus the project subject on.

Measuring Success: The project was tied to a rubric (See "Educational Components" at end of document), which helped guide the students through the process. The Maspeth High School learning community benefited in the waste reduction. We repurposed recyclables rather than having to consume new supplies of paper).

Educational Components: Please see end of Golden Apple Application.

Future Plans: We would like to explore ways to promote a more green-friendly visual arts program through reuse and experimental techniques and materials. Many materials are toxic and wasteful, so it would be exciting to invest in materials that would promote a light carbon footprint. For example, printing, drawing, and painting on handmade, recycled paper or using solar plate etching to minimize chemical use.

*** Project 4 was written by first-year visual arts teacher Adam Gordon. He conceived and implemented the project. * The rest of the document was written by Mr. Bell.**

Project 5: Sustainability Poster Contest

Type of Waste Targeted: Public waste including overconsumption of electricity, fossil fuels.

2014-2015 NYC DOE Su...

February 9, 2015 | By Sharon Jaye

Views: 615



Kirk Kyle - Grade 10 - Honorable Mention



Implementation

Why this: The Green Club participated in the NYC DOE Sustainability Art Contest last year as well as the year before that. Many at the school were inspired to see Green Club member Thomas Farrell's artwork featured in the 2014-2015 Sustainability Calendar. Thomas' self-portrait and message will hang in every Maspeth classroom (as well as in many other classrooms around New York) for the month of June. This year, the contest had students create a poster rather than a calendar entry. Students were asked to develop a "call to action" with their art this year.

What we did: The Green Clubbers spent two Wednesday meetings to create artwork for the contest. They discussed ideas related to sustainability initiatives then created colorful and thought-provoking art on 8.5 x 11 white sheets of paper. I sent completed work and student release forms to the Office of Sustainability.

Project planning: I read about this year's iteration of the art contest by reading the sustainability initiative newsletter delivered by email to all NYC DOE sustainability coordinators. Sharon Jaye, Director of Sustainability at the DOE, puts together the newsletter. She is a wonderful point person for New York City sustainability leaders.

Student involvement: About fifteen students started artwork but only a handful completed it before the deadline. Kurt Kyle Juanillo, who received honorable mention in last year's calendar contest, again received honorable mention in this year's poster contest. His artwork depicted buildings like books in a library, acknowledging that much can be learned from their design. His call to action included rooftop wind turbines, green roofs, and solar panels. Kurt's use of color and shading were superb.



Promotion: Published art is self-promoting. Both Thomas and Kurt had quick messages that students and adults can connect with. Thomas wrote, "Switch It Off" last year. Kurt included an inspirational "We Can Make A Better City." With relatively few resources consumed, student art can have a large reach, especially when viewed electronically. Kurt's art was posted online at this address:

<http://schools.nyc.gov/community/facilities/sustainability/about/events/PosterContestWinners>

It was a pleasure to see Thomas' art chosen not only for the sustainability calendar, but for the promotion of this year's poster contest!



Collaboration: Contests such as the NYC DOE Sustainability Poster Contest bring an element of competitive fun to Green Club meetings. Students (whether they are officially honored or not) love to create art. It allows them to express themselves, to explore a side of their intelligence that is seldom tested, and to offer a positive message to their audience.

Analysis

What Worked: The contest rules were as follows: “The topic can be anything within the realm of sustainability (energy, water, ecology, etc.), but must refer to an action that could be taken at school. The goal of the contest is to create a dialogue among students, teachers, and administrative staff.” Skillful in art or not, students enjoyed the experience of creating art with a purpose. The club discussion that took place before students put pencils to paper was rewarding for all involved.

What Didn't Work: I wish I had planned more time for students to complete their artwork. Some students were unable to submit work because of the quick approach of the deadline. Kurt's name incorrectly appeared online as “Kirk.”

Applicability to other Schools: The DOE art contests are open to all students in New York City Department of Education schools (charters included). Free but limited posters can be requested at:

<http://schools.nyc.gov/community/facilities/sustainability/about/events/PosterContestWinners>

Measuring Success: For students all over New York, art elicits an immediate and impactful response. In a glance, a student can connect with color, depth, and of course, subjects. I am proud of my students for their messages about sustainability. Kurt's *Call to Action* might help his peers see solar panels, wind turbines, and gardens not as novelties on sporadic rooftops, but as solutions that if widespread, could transform America's electrical grid.

Project 6: National Wildlife Federation Green STEM Guidebook Entry

Type of Waste Targeted: Packaging, fossil fuel consumption.



Implementation

Why this: I am lucky to serve on the National Wildlife Federation’s Green STEM Advisory Board. The board was asked to develop lesson plans that would promote STEM (Science, Technology, Engineering, and Math) in green disciplines. Green STEM, because it focuses on environmental engagement and problem-solving, is a perfect way to encourage students to reduce and reuse. Students can be provided the problem and be asked to develop the solution. Their subsequent strategies just might change the world!

What we did: The board met at the NY SunWorks Hydroponic Greenhouse at PS 333 in Manhattan last spring. There the team clarified the meaning of “Green STEM” and spoke about what it looks like in practice. We talked about projects we had completed (or only dreamed about) that incorporate all four aspects of STEM education. Obstacles to the successful implementation of Green STEM were discussed. Following the meeting, the advisory board members were tasked with creating an entry in a proposed Green STEM Guidebook, to be published by the National Wildlife Federation. The hope was to assemble a number of STEM lessons in one resource that could be used by educators to inform their practice. My entry focused on urban hydroponic gardening, the details of which I will omit here as I hope you will read them when the Guidebook is printed! My contribution will hopefully demonstrate that overly-packaged and distantly-shipped fruits and vegetables are not the only answer for urban dwellers. They can “farm” right here in New York. In doing so, they will lower their carbon footprint by saving fossil fuels and preventing plastics from entering the waste stream.

Project planning: Liz Soper, Director of K-12 Education Programs at the National Wildlife Federation, and Emily Fano, NYC Outreach Manager for the NWF’s Eco-Schools USA program, planned the advisory board’s meetings and agendas. They guided teachers in their efforts to make meaningful lessons for the guidebook.

Student involvement: The Green Clubbers feature strongly in my guidebook entry.

Promotion: Once published, the NWF Green STEM Guidebook will be a wonderful resource for educators and non-educators alike. It will showcase a number of projects-based learning activities that can serve as a template for thousands of explorations into Green STEM. When students are educated about the environment, and given opportunities to use science, technology, engineering, and math to problem solve on the environment’s behalf, they will create a more sustainable future.

Collaboration: It was a privilege to work with the other members of the Green STEM Advisory Board. They come from all of New York City’s boroughs and are remarkable for their enthusiasm and expertise. They are:

Samuel Janis, of the New York Harbor School on Governor’s Island.

Deise Kenny, of PS 154 in Queens.

Patricia Lockhart of PS 57, the Hubert H. Humphrey Elementary School in Staten Island.

Peter Mulroy of the iSchool in Manhattan.

Shakira Provasoli of the Manhattan School for Children.

Ray Pultinas of Dewitt Clinton High School in the Bronx.

Vicki Sando, of PS 41, the Greenwich Village School in Manhattan.

Analysis

What Worked: Meeting educators so knowledgeable in their fields was an inspiration. I look forward to working with them in the future and also to feedback from New York educators regarding the guidebook.

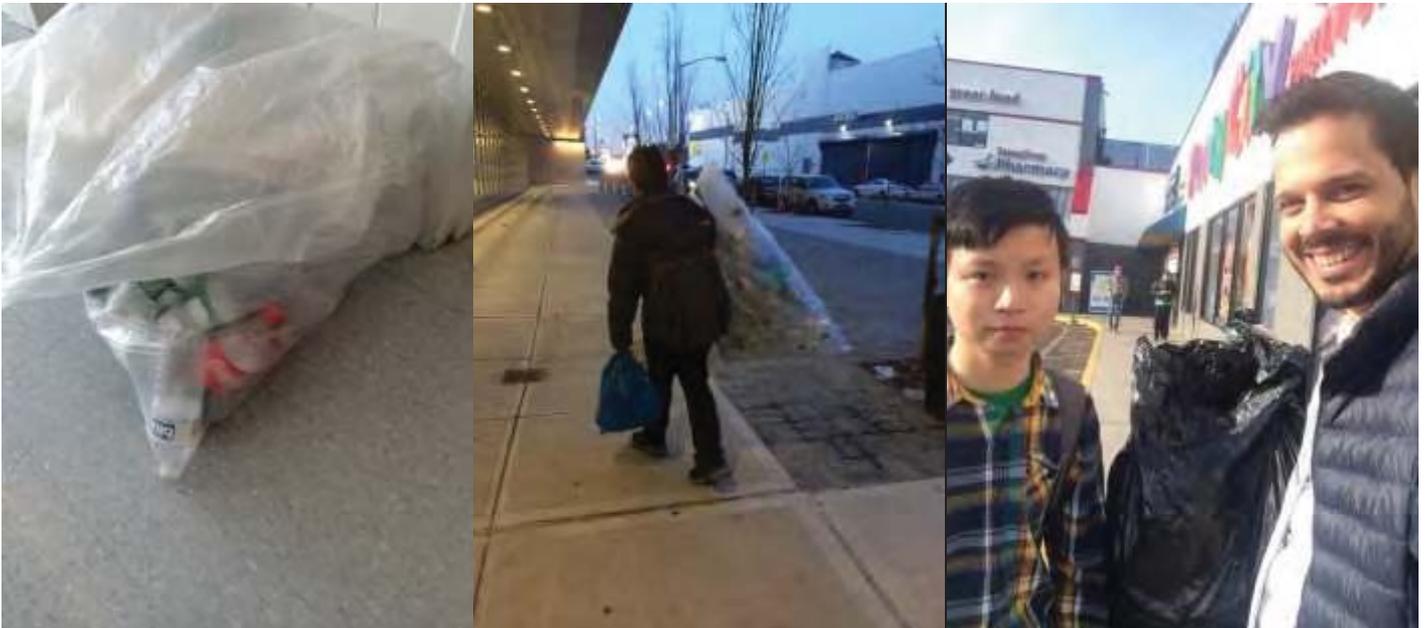
What Didn't Work: I would have loved to meet with Chancellor Carmen Fariña this year. Hopefully the Green STEM Advisory Board members will be able to share their experiences and viewpoints with her in the near future.

Applicability to other Schools: Green STEM initiatives might not always seem like an easy choice for educators, especially with high-stakes Regents examinations to prepare for. It is my hope that teachers will use the final copy of the guidebook as a resource to ignite the minds of future problem-solvers. The skills needed to thwart environmental disasters such as habitat loss, the extinction of species, and global warming, will be honed in Green STEM lessons.

Measuring Success: As the planet undergoes climate change, a shift in education is necessary for there to be a shift in environmental health outcomes. Teachers like those on the NWF's Green STEM Advisory Board are the innovators that will usher in an age where "reduce, reuse, and recycle" are not simply buzzwords, but solid practices.

Project 7: Bottle and Can Collection

Type of Waste Targeted: Redeemable bottles and cans.



Implementation

Why this: Maspeth High School is successful in separating redeemable bottles and cans from trash. The blue bins have box tops with a circular aperture cut out. Students place bottles and cans in these bins but without someone to collect them, they are shipped by the DSNY to recycling centers. This means the deposit is lost for those at the school.

What we did: Wei Hao Guo, an eleventh grader at Maspeth, volunteered to collect the bottles and cans in the blue bins of every Maspeth classroom after school. Wei Hao completes a sweep of the multiple floors of Maspeth High School every day. By the end of his travels, he ordinarily has a large bag of redeemable cans and bottles that would otherwise have been placed on the curb for collection rather than returned.

Project planning: Wei Hao regularly stops by my room to discuss the state of Maspeth's recycling program. He is a role model for his efforts.

Student involvement: Although Wei Hao is just one out of the thousand students at Maspeth High School, he is a trendsetter. His actions show that one person really can make a difference when it comes to waste reduction. By collecting bottles and cans, Wei Hao has eliminated a substantial volume of materials from entering waste collection in the first place.

Analysis

What Worked: The deposit on redeemables is now kept in-house. Bottles and cans that would have to be shipped by the Department of Sanitation are now walked across the street to Stop and Shop. Wei Hao checks the trash containers for redeemables as well. This helps the club meet its goal in preventing contamination.

What Didn't Work: Wei Hao does not have access to the many bottles and cans placed in the cafeteria's blue bins. They far outnumber the redeemables he collects in classrooms.

Applicability to other Schools: Many schools establish a bottle collection effort. This can be accomplished by individuals or clubs.

Measuring Success: Whereas the cafeteria program involves every student at the school, this project involves just one. That does not minimize Wei Hao's contribution. If every student had his resolve and work ethic, the world would be a green place indeed!

Project 8: Recycling and Reuse Collection Drives

Type of Waste Targeted: Household waste including electronics, clothes, books, furniture, paper, and miscellaneous material.





Implementation

Why this: The Green Club wanted to boost its waste collection efforts outside of school and sought to co-host two waste recovery efforts in Queens. Knowing that community waste is substantial, they served as the volunteer helper force at community recycling events organized by Council Member Elizabeth Crowley, State Senator Joe Addabbo, and Assemblyman Mike Miller.

What we did: The Green Clubbers participated in Council Member Crowley’s April 11th “Maspeth Earth Day Recycling Fair” at the Maspeth Federal Savings Bank on Grand Avenue in Maspeth. There, they assisted with paper shredding, electronics recycling, and composting education. Two weeks later, club members gathered in one of New York’s finest parks, Forest Park in Woodhaven, to assist Senator Addabbo and Assemblyman Miller with their co-sponsored “Recycling Day.”

Project planning: Amanda Farias, Council Member Crowley’s aide, notified me about the *Maspeth Recycling Fair*. Knowing that *Recycling Day* was hugely popular for Queens residents, I reached out to Frank Fazio of Senator Addabbo’s office to enlist the Green Club for the April 26th event.

Student involvement: Five students attended the Maspeth Earth Day Recycling Fair on a Saturday. This was noteworthy as it was the first Green Club event I had to miss: I was returning to the States after spending that week on the other side of the globe studying the coral reef off the coast of Gili Trawangan in Indonesia. Back in my home country, six students joined me for *Recycling Day* in Forest Park.

Promotion: These two posters were created for the events.



Recycling Day
Sunday, April 26, 2015
10 AM- 2 PM
Rain or Shine!
Sponsored by
Senator Joe Addabbo & Assemblyman Mike Miller

The George Seuffert Sr. Bandshell
parking lot located in Forest Park
on Forest Park Drive, one block west of Woodhaven Blvd in
Woodhaven.

I notified the Green Club members of both events on the MHS Green Club Facebook page (www.facebook.com/mhsgreenclub).

Collaboration: Council Member Crowley and her staff members have been consistent partners of the Maspeth High School Green Club. It was her office that gave the Club its first project (painting graffiti) back in 2011. Senator Joe Addabbo came to the Eco-Schools USA Green Flag celebration at Maspeth last year (and rode on the hovercraft at the simultaneously held Maspeth Science Fair). The club members wanted to set up a similar partnership with him. Maspeth Federal Savings, NYC Recycles, NYC Organics, and the New York Restoration Project MillionTreesNYC were all on hand at the *Maspeth Recycling Fair*. DataStruction, the Salvation Army, eGreen Electronic Recycling, the Boy Scouts, the 104th NYPD precinct, the FDNY, and the Julianna Rose Children’s Foundation teamed up with the Green Club for *Recycling Day*.

Analysis

What Worked: The students helped pack veritable truckloads of electronics, paper, and salvageable materials at the collection events. Old televisions, stereos, speakers, and thousands of other e-items are recycled by companies such as eGreen Electronic Recycling, giving them new life and saving the environment from toxic chemicals. Electronic parts fortunately get a new purpose rather than putting the “fill” in landfill. Companies like DataStruction shred paper, giving residents peace of mind regarding sensitive household documents.

What Didn't Work: If there is any complaint to be made, it is that some residents seek the latest and greatest items for their homes without fully examining the consequences of a consumerist mindset. I watched as functional flatscreen TV's were tossed into the eGreen truck. Perhaps it was because they weren't flat enough or that they lacked the resolution of the newest models. Whatever the specific circumstance, America's current throw-away attitude is already costing the environment. I took home an expensive accordion that simply needed a bit of glue. It was refreshing to have the Salvation Army present at the Recycling Day event. They took just about everything imaginable off the hands of Queens Residents. By selling one person's trash back to consumers who consider it treasure, they prevent wastefulness. They are certainly a noteworthy ambassador organization for this Reduce and Reuse challenge.

Applicability to other Schools: Events like this happen frequently (Senator Addabbo organizes two per year, and Council Member Crowley one per year). Student groups just have to make a phone call to sign up.

Measuring Success: The stats have yet to be compiled for the waste collection totals at these two events, but they are bound to be remarkable. At Senator Addabbo and Assemblyman Miller's spring 2013 *Recycling Day*, they took in a haul of 9.3 tons of electronics and over 4 tons of paper. Last year they collected 7.8 tons of electronics and 3.9 tons of paper, numbers that do not disappoint despite a small downturn. It was an honor to have the club supply the heavy lifting for the events. I watched the Green Clubbers assist young and old alike by carrying bags of materials to trucks for recycling and reuse and felt an immense satisfaction in knowing that they were preventing tens of thousands of pounds of waste from heading to landfills.

Project 9: Community Cleanups, Tree Giveaways, and Gardening

Type of Waste Targeted: Litter and wasted space.



Implementation

Why this: Litter and landscaping are two indicators of the health of a city. Much like Broken Window Theory, when trash accumulates on shared spaces, it decreases the societal worth of and concern for property. It also encourages poor behavior: when litter is strewn over a space, some inhabitants find it acceptable to add *just a bit more*. New York has plenty of such spaces. By recovering and beautifying them, the Green Club promotes a reduction in waste.

What we did: The Green Club joined forces with the Juniper Civic Association and its volunteer arm, the Juniper Juniors, to complete two community cleanups this year. For both, they focused on 57th avenue adjacent to the Long

Island Expressway and close to Maspeth High School on the border of Maspeth and Elmhurst. In the fall volunteers were able to remove litter from 80th street to 74th street. On April 18th they returned to cover even more ground, removing debris along the same route and then along the Queens Midtown Expressway service road.



Green Clubbers and Juniper Civic Association volunteers pose for a picture during their spring cleanup.



That same day the club traveled to the Brooklyn-Queens border to perform spring cleaning and landscaping on the grounds of the Vander-Ende Onderdonk House, the oldest Dutch Colonial House in New York City.



The Green Club co-hosted two MillionTree Giveaway events, one in October 2014 and one in April 2015.



The club is excited to transform its own campus each year by completing gardening projects. This year Bentley Seeds of Cambridge, New York donated nearly one thousand dollars' worth of seed packets to the school for the Green Club to use as it continues to reduce dependence on store-bought fruits and vegetables.



Maspeth
HIGH SCHOOL
THE CLASSICAL SCHOOL OF NEW YORK CITY

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Project planning: Len Santoro, the Vice President of the Juniper Park Civic Association, organized both roadside cleanups. For the second one, he called the 104th precinct for traffic support along the heavily travelled service road. David Gigler, past president of the Maspeth Kiwanis Club, arranged for the Green Club to take part in the site cleanup and landscaping work at the Onderdonk. Council Member Elizabeth Crowley invited the Green Clubbers to co-host the Million Tree Giveaway events.

Student involvement: Five to fifteen students ordinarily turn up on weekends to take part in Green Club events.

Promotion: The club's efforts were promoted in newspapers and in community flyers.



The write-up above appeared in the Ridgewood Times on October 9, 2014.



This is the flyer for the April 11th tree giveaway.

Collaboration: The Maspeth High School Green Club might be in just its fourth year of existence, but it has already formed some durable community partnerships. For its cleanup projects it routinely partners with the Juniper Civic Association and the Juniper Juniors under the guidance of Len Santoro. For Million Tree Giveaway events, the club

teams up with Council Member Crowley's Office, Maspeth Federal Savings Bank, and the New York Restoration Project. Ginny, Richard, and others from the Greater Ridgewood Historical Society are a pleasure to work with at the Onderdonk House. A new partnership with Bentley Seeds will lead to some prosperous growing seasons.

Analysis

What Worked: The club gathered over twenty bags of garbage during its fall cleanup and nearly that many again in the spring. This has aesthetic benefits and reduces the plastic contamination on the roadsides next to the school. Trees that are properly planted in the Million Tree Giveaway remove carbon dioxide from the atmosphere and likewise add to the appeal of living in New York.

What Didn't Work: Unfortunately, the 57th Avenue corridor along the Long Island Expressway has become notorious as a dumping ground. It is sad to see litter accumulate even the day after a Green Club effort.

Applicability to other Schools: Arranging weekend cleanups, tree giveaways, and gardening projects is a great way to get to know students outside of school. Many teachers would be surprised at how willing students are to help out in the community.

Measuring Success: Annually, each tree that is part of the MillionTreeNYC program reduces energy costs by \$50. (http://www.milliontreesnyc.org/html/about/urban_forest_facts.shtml) By giving away one hundred trees at one event, the Green Clubbers save New York \$5000! Trees save cooling costs by providing shade. New York's urban trees capture 2,202 tons of pollution, lowering the incidences of respiratory disease. They store 1.35 million tons of carbon by using carbon dioxide as a reactant for photosynthesis. Trees literally take carbon dioxide emissions, so feared in modern society, and grow by incorporating the greenhouse gas into carbohydrates!

Project 10: IYEYS Conference Participation

Type of Waste Targeted: All varieties.





Implementation

Why this: The Green Club loved the idea of a student-led conference on the environment. They found this information online at www.greeningforward.org: “Held annually, the International Young Environmentalists Youth Summit (IYEYS) is a youth-imagined, youth-driven, and youth-executed event aimed at providing young environmentalists the tools they need to take their campaigns to the next level. From youth who have started global organizations, to youth who are leading school-based environmental projects, IYEYS is for everyone. We also welcome adults who are looking to learn more about how to implement youth leadership and engagement strategies into their classrooms, organizations, or even businesses.”

What we did: The club, needing a replacement for the excellent *Ban the Bag* and *S.T.O.P. Bags* Conferences, chose IYEYS. Nine Green Clubbers braved the cold on a snowy Sunday, March 1st to attend the youth-programmed conference. This year, March came in like a lion and stayed that way! The conference was held at the Point Community Development Center in the Hunts Point neighborhood in the Bronx. The nine students were split into three teams who each received a separate schedule of events to attend – that way, the club could participate in all of the day’s offerings.

At the conference, the club learned about a wide range of environmental issues from experts and active participants in the field. These topics were: sustainable and urban agriculture, stream ecology and water conservation, marine and wildlife conservation, renewable energy, waste and consumption, transportation and water quality, land use and environmental planning, environmental justice, and environmental internships and career planning.

Before the official start of the conference, the club members enjoyed a bagel breakfast and perused environmental booths from these organizations: Alliance for Climate Education, Bronx Green-Up, Bronx River Alliance, Bronx Zoo, Environmental Professionals of Color – NYC, GenerationOn, Greening Forward Youth Council, Grow NYC, National Wildlife Federation, Rocking the Boat, Students for Service, and The Nature Conservancy’s LEAF Program.

Sharon Jaye, Director of Sustainability at the DOE welcomed the crowd. Eighteen year-old Hasib Muhammed of Greening Forward delivered the Keynote. Attendees then chose which breakout sessions they wanted to attend. A complete list of the breakout sessions can be found here: <http://greeningforward.org/iyeys/> (click schedule).

Project planning: IYEYS was organized by the young team at Greening Forward. They are among the best and brightest environmentalists I have ever met.

Student involvement: The nine Green Clubbers in attendance enjoyed being in the company of like-minded young environmentalists. As IYEYS is a national conference, there were many young people from out of state, offering a refreshing mix of opinions and views.

Promotion:



Collaboration: Many partner organizations made the conference possible. They included the DOE Sustainability Initiative, the Alliance for Climate Education (ACE), Eco-Schools USA, the Nature Conservancy, the Wildlife Conservation Society, the New York Botanical Garden, Solar1, Bronx River Alliance, Global Kids, IDEAS, Rocking the Boat, GenerationOn, Earth Echo International, and the Center for Diversity and the Environment (CDE),

Analysis

What Worked: The IYEYS Conference was a great success. It had a very organic feel throughout, with passionate young people free of career bias running the show. The Green Clubbers enjoyed the various events that were planned, like the seed starting activity presided over by horticulturalist Sara Katz and the climate change presentation delivered enthusiastically by Maayan Cohen of the Alliance for Climate Education.

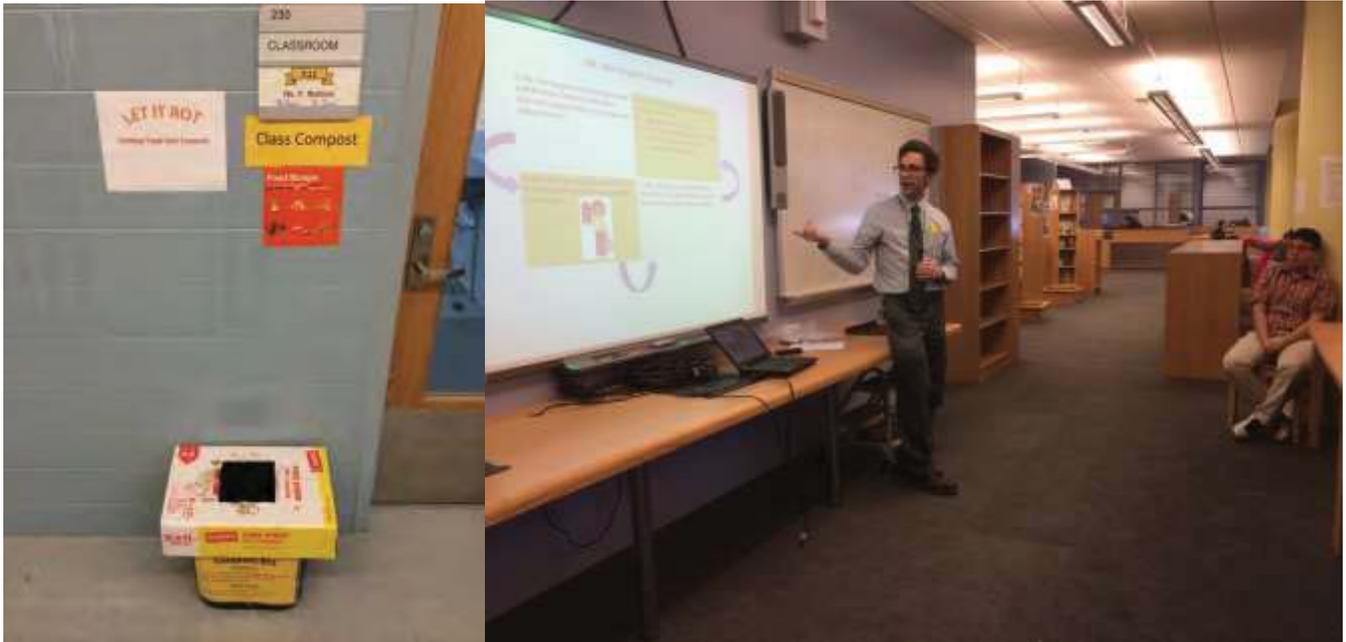
What Didn't Work: Some of the breakout sessions (the seed starting activity included) ran over their allotted time, forcing the next session to lose valuable time. Technology problems hampered the start of the program. The social media contest seemed to sputter, perhaps because of the snow and fading daylight.

Applicability to other Schools: It was a privilege to have IYEYS in New York. Even if it will move to a new city next year, it seems that every year there are a number of wonderful environmental conferences to choose from.

Measuring Success: IYEYS was successful in not just bringing young people together, but showing young people that together they could take the lead!

Project 11: Partner School Collaboration

Type of Waste Targeted: Compostable waste.



Implementation

Why this: Maspeth High School shares its three-year-old building with Q721, a satellite of the District 75 John F. Kennedy School. Q721 houses about 50 special needs learners on the second floor. I was fortunate to meet Pat Watson, a teacher at the school, and develop a partnership with her. Through our connection, Maspeth High School and Q721 have shared in the caretaking responsibilities of the school's gardens and compost bins. Mr. Douglas Van Hoppe, the Maspeth High School librarian saw in our co-location a unique opportunity to educate students and teachers from two schools about composting, a subject he is passionate about.

What we did: Mr. Von Hoppe donated a third compost bin to the school. He also donated his expertise, inviting both the D75 students and the Maspeth High School Green Club to the library for a presentation on composting techniques. His presentation was very informative, showing students how to better turn organic waste into reusable and life-giving compost. He developed a schedule for students from both schools to turn and water the compost to maintain ideal conditions for decomposition.



Ms. Watson worked with me to create a compost bin for teachers on the second floor. Teachers can now leave food scraps in a hallway location to avoid teaching interruptions. Ms. Watson also schedules a visit to my classroom about once a month with her students. There, they study the many organisms in room 328, which now is lucky to have two 330 gallon fish tanks, one freshwater and one saltwater. Her students like to learn about the room's red-eared slider, its leopard gecko, its crickets, its mouse, its many reef organisms, and its models of organ systems.

Project planning: Pat Watson and Gwen Edwards of Q721 are both inspirational women who everyday make a difference in the lives of the learners they support and nurture. To have their co-planning expertise is great.

Student involvement: D75 students now have an active role in the cafeteria organics collection, in the school gardening (they recently tilled the soil along the south-facing wall of the school), and in the school composting program. They are gaining valuable experiences not the least of which is social. Many D75 students are overjoyed to interact with Maspeth High School students.

Collaboration: In many buildings that cohouse schools in New York, adversarial rather than shared stories are the norm. The ongoing collaboration between Q721 and Maspeth High School benefits the students and the staff of both schools.

Analysis

What Worked: The compost bins at the school are rich with invertebrates, a strong sign of the healthy breakdown of green and brown matter. The gardens are being planted as this application is being written! With over 500 donated seed packets from Bentley Seeds to work with, and eager students from two schools ready to plant, this collaborative project promises to be one of the Green Club's most successful.

What Didn't Work: Ms. Watson and I had hoped to build raised beds in the early spring. Phil the custodian plans to help us build them when we finalize a design.

Applicability to other Schools: With many formerly large high schools split into separately-administered academies, a strong lesson can be learned here. Collaboration between schools in the same building is very rewarding. Sharing resources and instruction boosts learning.

Measuring Success: When our tomato plants produce their harvest this summer, I will have the best evidence of a successful partnership!

Project 12: Doc Day Screenings

Type of Waste Targeted: Habitat destruction, land and water mismanagement, disposable plastic.



The Life of Mammals and *Sticky* both display the beauty of life on Earth.



Addicted to Plastic demonstrates our shared waste problem and its influence on fragile ecosystems.



Implementation

Why this: The Green Club scheduled three “Doc Day” screenings this year to increase awareness of environmental issues and to encourage students to rethink their roles in society.

What we did: On three consecutive Wednesdays over the winter, the Club screened David Attenborough’s *The Life of Mammals*, Ian Connacher’s *Addicted to Plastic*, and *Sticky*, a short animated film about stick insects known as “Tree Lobsters.”

Project planning: I wanted to begin the Doc Day series not with a somber tale of human interference but with a showcase of biodiversity. The club members enjoyed seeing how mammals are adapted to the various biomes present on Earth. Green Clubbers took away two things: first, that Earth’s species are beautiful, and second that its ecosystems are susceptible to damage from the dominant and big-brained species *Homo sapiens*. This was reinforced by the second film, *Addicted to Plastic*, which focuses on the production, consumption, and end fate of plastics, which unfortunately don’t break down in nature but persist in smaller and smaller pieces. Students were shocked to see that “floating plastic islands” are far more dangerous than even that term implies. They watched how microbeads and photo-degraded plastics end up distributed in gyres without life even having the option of avoiding their detrimental influence. The third short film was one of hope: “Tree Lobsters,” of the species *Dryococelus australis* were thought to have gone extinct in 1920 from their native Lord Howe Island as a result of invasive black rats. In 2001, a population was rediscovered on the neighboring and inhospitable Ball’s Pyramid with just 24 individuals left on Earth. Today, through a rehabilitation effort led by the Australian government, the insect again has a chance. Thousands of individuals have been raised from that meager remnant population.

Student involvement: Over twenty students attended *The Life of Mammals*. Nearly that many showed up to watch *Addicted to Plastic* and about half that number watched *Sticky: An Animated Film*. The club members had moments of uproar, laughter, and sadness. With the volume turned up on the speakers, the room was as close to a movie theater as I could make it.

Promotion: The club created posters for *The Life of Mammals*. It was nice to see non-Green Clubbers attend the showing.



Analysis

What Worked: The Doc Day screenings were very popular for the Green Clubbers and for guests. They offered a change in pace from the often busy schedule of the fall and spring months.

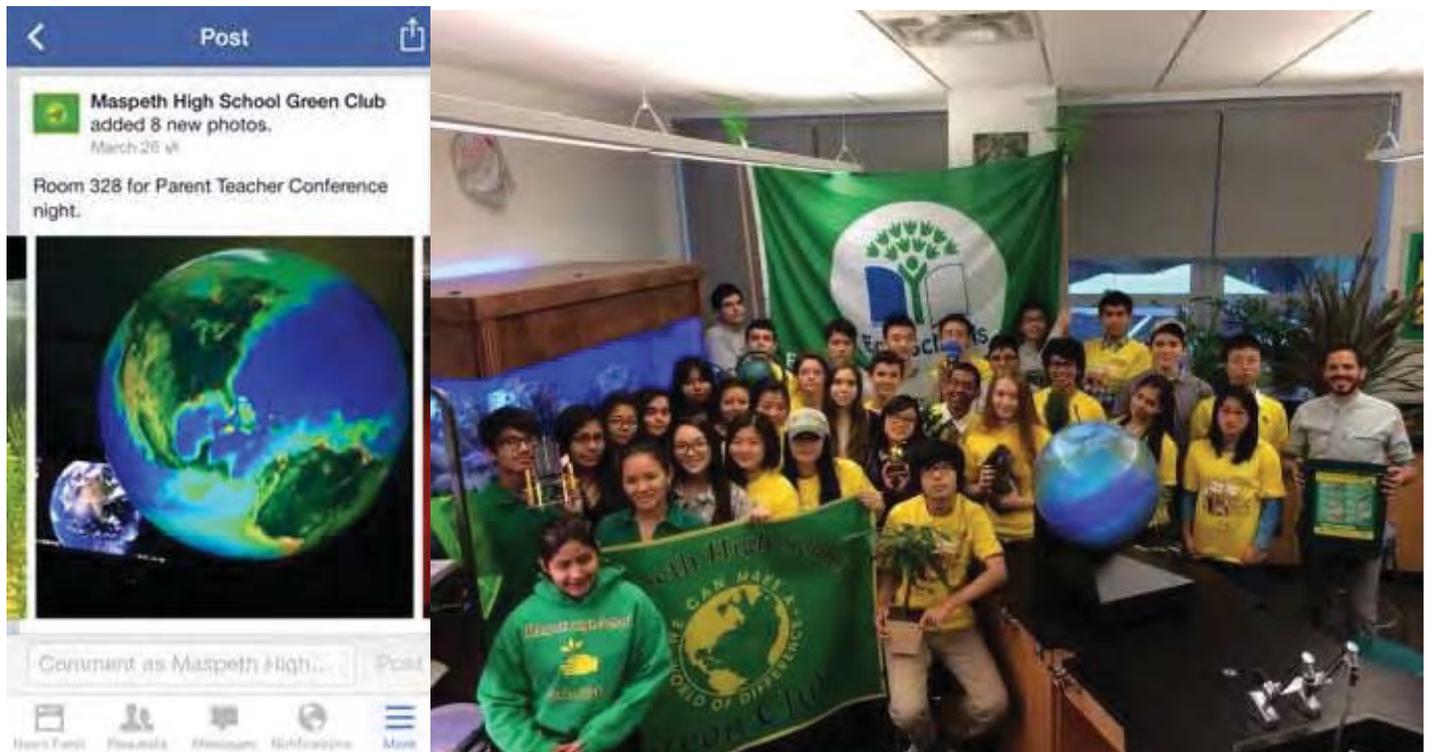
What Didn't Work: I only hope that New York City students don't view scenes from these films as *someone else's* life or worse, as *someone else's* problem. Many of my students rarely travel, and as a result, don't see outside of their urban confines. Some don't appreciate life the way a student who is surrounded by organisms might.

Applicability to other Schools: *The Life of Mammals* and *Addicted to Plastic* appear on Netflix. *Sticky* is on Vimeo.

Measuring Success: If even one person received a spark of interest about life on our planet that results in a protective action, this project was a success. I hope some Maspeth students will consider an environmental career, possibly in species conservation. Sometimes, it takes a glimpse of a rare tree insect that has rebounded from the absolute brink of extinction to get a child interested in their role in nature. The line of extinction is one that cannot be re-crossed, no matter how tragic the loss or deleterious the consequences. Words such as these resonate with me, and I hope with my students too: "Extinction means that we mourn it in the present if we knew about its past. And in the future we just wonder. We've got to stop extinction now because despite the efforts of science there is no going back.....and.....the future is silent."

Project 13: Digital Globe

Type of Waste Targeted: Habitat destruction, land and water mismanagement, disposable plastic.



Implementation

Why this: The Green Club was proud to use Golden Apple funds to purchase a Global Imagination *Magic Planet*. It is the first of its kind in a New York City school. A museum-quality digital globe based on interior light projection, a spherical display, unique optics, and sophisticated software, the *Magic Planet* allows students to see the planet in 3D and in all its dynamic glory.

What we did: Maspeth High School purchased the *Magic Planet* from Global Imagination, a company based in Campbell, California. The company shipped the globe cross country and loaded its accessory laptop with exhibits created by its museum partners. These exhibits were tailored to my particular interests as a science teacher; I gave Global Imagination a list of about fifty applications I would want the *Magic Planet* to carry out. The planet has a home base in room 328 but can be moved in the building for lessons in other rooms or to add a wow factor during open houses or curriculum nights.

Project planning: I visited the American Museum of Natural History and saw a *Magic Planet* hanging from the ceiling in the Earth and Planetary Sciences wing. It showed beautifully an animation of the oceans draining and filling again, revealing the lithosphere under the hydrosphere. It presented the mid-Atlantic ridge, the Marianas trench, and other notable ocean-floor features in a way that no computer program could do.

Student involvement: Students in my classroom regularly get up out of their seats to take a “mini field trip” over to the corner of the room where the digital globe is located. They can see just about anything that suits a spherical screen, planetary displays or otherwise. The *Magic Planet* can show the rotational motion of all the planets in the solar system, it can show sun spots forming on the Sun, and most useful to me, it can show the splendors of Earth’s

processes. Storms track across its surface, night lights show up to depict light pollution, plate boundaries are delineated, and carbon concentration fluctuates with the seasons.

Promotion: The *Magic Planet* promotes the Earth's health and conscious decision-making because it displays the Earth uniquely for students that would otherwise not understand its many interacting parts.



Above: Maspeth's *Magic Planet* Digital Globe Can Show Current or Historic Weather Patterns

Collaboration: I am grateful to the American Museum of Natural History for providing an “aha moment” that led to the acquisition of the digital globe. Maspeth High School's science spaces resemble museum and zoo exhibits at times, thanks to a supportive administration that has prioritized the teaching of hands-on, inquiry-based science from the outset.

Analysis

What Worked: The globe shows Earth processes and human impacts like no other device can. When attempting to persuade my students to show sound environmental judgement, it is an unrivaled tool because of its global and dynamic qualities. I can show air pollution from one country being circulated globally by clicking on an animation based on NASA satellite imagery. One application shows the melting of the ice caps while another shows projected sea level changes.

What Didn't Work: The only animation that failed to work among the exhibit options on the pre-loaded laptop was the one showing continental drift.

Applicability to other Schools: The globe is expensive but as interest in the technology increases, the prohibitive cost is likely to come down. China has deemed the technology necessary for 21st century education and is *Magic Planet's* number one customer. I hope American schools follow suit.

Measuring Success: The *Magic Planet* nurtures an environmental ethos in the students that see it. If we are to truly reduce, reuse, and recycle, students have to know what they are saving.

Educational Components

From Adam Gordon and the Art Department:

Assessment Materials

Art III Rubric – Cardboard Construction

Categories	4 Points	3 Points	2 Points	1 Point
Use of Elements and Principles of Art	<p>Elements and principles are successfully integrated into all of the works.</p> <ul style="list-style-type: none"> • All parts of the face are in proportion 	<p>Elements and principles are successfully integrated into all of the works.</p> <ul style="list-style-type: none"> • Most parts of the face are in proportion 	<p>Elements and principles are successfully integrated into all of the works.</p> <ul style="list-style-type: none"> • Some parts of the face are in proportion 	<p>Elements and principles are successfully integrated into all of the works.</p> <ul style="list-style-type: none"> • Few parts of the face are in proportion
Use of Materials and Techniques	<ul style="list-style-type: none"> • At least 5 different layers have been created • Embellishments include details for eyes, shadows in the face, hair, clothing 	<ul style="list-style-type: none"> • Only 4 different layers have been created • Embellishments include some, but not all details for the face and hair 	<ul style="list-style-type: none"> • Only 3 different layers have been created • Embellishments include few details for the face and hair 	<ul style="list-style-type: none"> • Only 1-2 different layers have been created • No details for the face and hair
Engagement of the Viewer	<ul style="list-style-type: none"> • Personal symbol is meaningful and impactful • Portrait exhibits a sense of emotional depth 	<ul style="list-style-type: none"> • Personal symbol is meaningful, but no emotional response • Portrait has some feeling and emotion 	<ul style="list-style-type: none"> • Symbol is person, but not substantial or important • Little emotional response to the portrait 	<p>The portrait does not engage the viewer and a symbol is not present</p>
Originality and Creativity	<ul style="list-style-type: none"> • Use of layers to create depth in the face and body 	<ul style="list-style-type: none"> • Some use of layers to create depth in the face and body 	<ul style="list-style-type: none"> • Little use of layers to create depth in the face and body 	<ul style="list-style-type: none"> • No use of layers to create depth in the face and body
Participation	<p>Full use of class time, bell to bell. Materials are properly handled</p> <ul style="list-style-type: none"> • Cardboard and glue was properly cleaned up every single workday • Participation in critiques and self-assessments 	<p>Most of the class time is used toward project goals. Direction needed to clean up</p>	<p>Some of the class time is used towards project goals. Materials not properly cared for.</p>	<p>Poor use of class time and handling of materials</p>

Lesson Number	Date	Unit	Class Information
2/4	11.13.14	Tech Project	Art III
Objectives		Standards Addressed (CCS; NYS; Blueprint; etc.)	
<p>MASTERY: Students will be able to create an original drawing in order to plan for their cardboard construction.</p> <p>THINKING SKILLS: Students will Persist in creating a drawing that will serve as a template for a construction project</p>		Blueprint: Students hone observation skills and discuss works of art; develop visual arts vocabulary to describe art making, the tools and techniques used to produce art, and the elements and principles of design; read and write about art to reinforce literacy skills; interpret artwork by providing evidence to support assertions; reflect on the process of making art.	
Differentiation		Assessment	
Activities for visual, audio, and kinesthetic learners		1-1 student, teacher conference; visual observation	
Aim (Quaestio)			
How can we translate 2D art into 3D?			
Guided Questions Based on Bloom's Taxonomy; Socratic Method			
<ol style="list-style-type: none"> Knowledge: Define the goals of the tech project. Comprehension: Explain the obstacles and challenges you've encountered while constructing your design. Application: Discover how to create a relief sculpture by using only shapes and lines. Analysis: Examine the purpose of creating a drawing and then tracing it onto the cardboard. Synthesis: Assemble and arrange the parts of your design will 'pop' out of the base layer. Evaluation: Assess the progress of your project and determine what needs to be tweaked. 			
Do Now (Nunc Agenda)			
List and describe some of the challenges you've encountered so far, and describe the way you were able to problem solve these obstacles.			
Procedure			
<ol style="list-style-type: none"> Go over Do Now: teacher will call on two or three students to share out some of the challenges they've encountered while creating this project and some of the ways they were able to solve these challenges. Demonstration – Explain and demonstrate how to use mod-podge to glue the pieces together. (You will need a brush, a piece of scrap paper to place the glue onto. When you've finished using the paintbrushes, you must place them in the soapy water tray located inside of the sink. Teacher will remind students that they must have at least 3 different layers to create a feeling of depth in the construction. Discuss portrait photos – begin photographing students as preparation for final project Work session – students continue cutting out shapes and start gluing the pieces together to create the various layers. 1-1 student, teacher conferences. Circulate the room to assess students' progress and discuss goals and strategies with struggling students Project clean up and breakdown 			
Materials Needed			
PowerPoint, Smart Board; cardboard, glue, paper, pencils, scissors			

Name _____

Period _____

Art III - Cardboard Construction Self Reflection

Give yourself a score for each of the following categories from the rubric:

1. **Use of Elements and Principles of Art** ____/4

- Elements and principles are successfully integrated into the work
- All parts of the face are in proportion

2. **Use of Materials and Techniques** ____/4

- At least 5 different layers have been created
- Embellishments include details for the eyes, shadows in the face, hair, clothing, ect.

3. **Engagement of the Viewer** ____/4

- Personal symbol is meaningful and impactful
- Portrait exhibits a sense of emotional depth

4. **Originality and Creativity** ____/4

- Use of layers to create depth in the face and body

5. **Participation** ____/4

- Handed in on time
- Full use of class time, bell to bell.
- Materials properly stored away and cleaned up
- Participation in critiques and assessments

Answer the following questions **in full, complete sentences using correct grammar and spelling**. Do not abbreviate words or write with one-word answers. You must **use examples from your artwork**. Simply answering the questions is not sufficient if you did not cite an example.

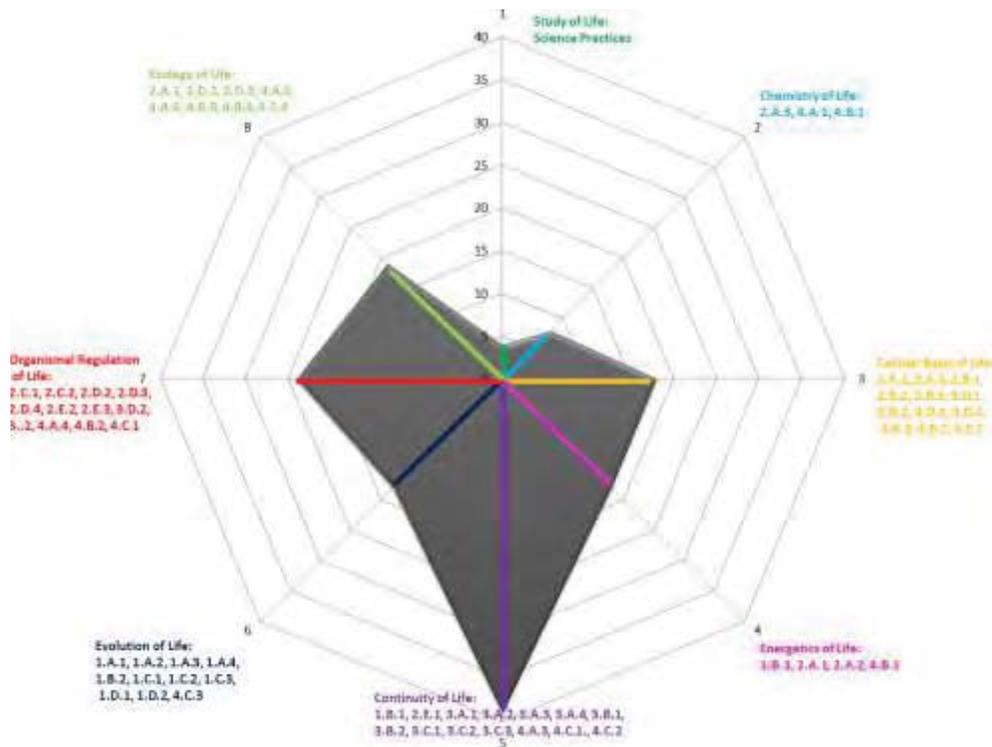
1. Describe, in detail, the process you used from start to finish in order to create your project.
2. What symbol did you incorporate into your artwork? Why did you choose this and what is the significance of the symbol?
3. Describe something that was successful in your work. Why do you feel this way?
4. Describe something that you wish you could improve on. What is it and why?
5. What are your thoughts on this project? Be honest, please. You will not lost points or offend anyone for giving your honest opinion. It will help improve the project to meet the needs of future students!

Green Club projects and biology lessons are closely intertwined. I align the New York State Living Environment Curriculum to every one of the projects. I now align the AP Biology Curriculum as well.

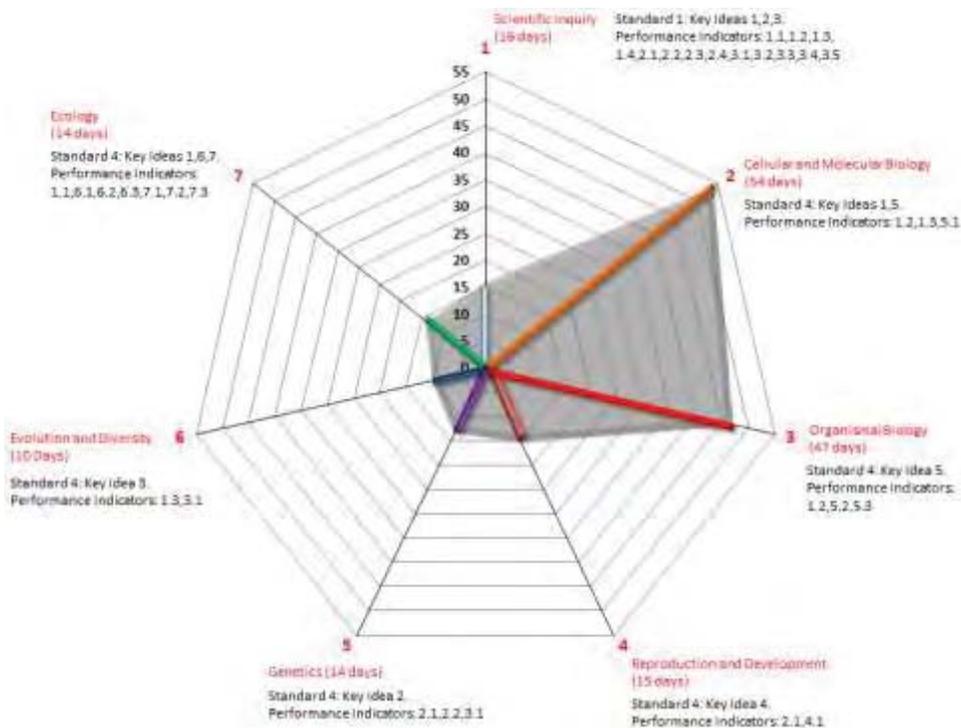


Maspeth High School AP Biology students using repurposed plastic water bottles to grow plants for a lab activity and Mr Bell posing next to a Tesla Model S at the Shops at Columbus Circle.





Above: The AP Biology Topics and Timelines at Maspeth High School



Above: The Regents Biology Topics and Timelines at Maspeth High School.

Below: The Comprehensive Curriculum Component of the Maspeth AP Biology Ecology Unit.

<p>Unit 8: Ecology of Life</p> <p>39. Ecological Levels</p>	<p>4/14-5/8 (19 Days)</p>	<p>Chapter 52: An</p>	<p>Essential knowledge 2.A.1: All living systems require constant input of free energy.</p> <p>e. Changes in free energy availability can result in changes in population size.</p> <p>f. Changes in free energy availability can result in disruptions to an ecosystem.</p>
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<p>a. Populations, communities, ecosystems, biomes, and biosphere. b. Biodiversity.</p> <p>40. Population Ecology</p> <p>a. Density and dispersion. b. Population growth and limits. c. Life history diversity.</p> <p>41. Community Ecology</p> <p>a. Interspecific interactions. b. Trophic structure. c. Ecological niches. d. Disturbance and ecological succession. e. Biogeography ranges.</p> <p>42. Ecosystem Ecology</p> <p>a. Energy flow. b. Chemical cycles and reservoirs.</p> <p>43. Human Impacts</p> <p>a. Renewable and nonrenewable resources. c. Conservation, sustainability, and stewardship.</p> <p>Lab Reports: Investigation 10: Energy Dynamics.</p>	<p>Introduction to Ecology and the Biosphere.</p> <p>Chapter 53: Population Ecology.</p> <p>Chapter 54: Community Ecology.</p> <p>Chapter 55: Ecosystems and Restoration Ecology.</p> <p>Chapter 56: Conservation Biology and Global Change.</p>	<p>Examples: Change in the producer level can affect the number and size of other trophic levels, change in energy resources levels such as sunlight can affect the number and size of the trophic levels.</p> <p>Essential knowledge 2.D.1: All biological systems from cells and organisms to populations, communities and ecosystems are affected by complex biotic and abiotic interactions involving exchange of matter and free energy.</p> <p>a. Cell activities are affected by interactions with biotic and abiotic factors. Examples: Cell density, biofilms, temperature, water availability, sunlight.</p> <p>b. Organism activities are affected by interactions with biotic and abiotic factors. Examples: Symbiosis (mutualism, commensalism, parasitism), predator–prey relationships, water and nutrient availability, temperature, salinity, pH.</p> <p>c. The stability of populations, communities and ecosystems is affected by interactions with biotic and abiotic factors. Examples: Water and nutrient availability, availability of nesting materials and sites, food chains and food webs, species diversity, population density, algal blooms. ✘ <i>No specific example is required for teaching the above concepts.</i></p> <p>LO 2.22 The student is able to refine scientific models and questions about the effect of complex biotic and abiotic interactions on all biological systems, from cells and organisms to populations, communities and ecosystems.</p> <p>LO 2.23 The student is able to design a plan for collecting data to show that all biological systems (cells, organisms, populations, communities and ecosystems) are affected by complex biotic and abiotic interactions.</p> <p>LO 2.24 The student is able to analyze data to identify possible patterns and relationships between a biotic or abiotic factor and a biological system (cells, organisms, populations, communities or ecosystems).</p> <p>Essential knowledge 2.D.3: Biological systems are affected by disruptions to their dynamic homeostasis.</p> <p>b. Disruptions to ecosystems impact the dynamic homeostasis or balance of the ecosystem. Examples: Invasive and/or eruptive species, Human impact, Hurricanes, floods, earthquakes, volcanoes, fires, Water limitation, Salination. ✘ <i>No specific system is required for teaching the above concepts.</i></p> <p>Big Idea 4: Biological systems interact, and these systems and their interactions possess complex properties. All biological systems are composed of parts that interact with each other. These interactions result in characteristics not found in the individual parts alone. In other words, “the whole is greater than the sum of its parts.” All biological systems from the molecular level to the ecosystem level exhibit properties of biocomplexity and diversity. Together, these two properties provide robustness to biological systems, enabling greater resiliency and flexibility to tolerate and respond to changes in the environment. Biological systems with greater complexity and diversity often exhibit an increased capacity to respond to changes in the environment. At the population level, as environmental conditions change, community structure changes both physically and biologically. The study of ecosystems seeks to understand the manner in which species are distributed in nature and how they are influenced by their abiotic and biotic interactions, e.g., species interactions. Interactions between living organisms and their environments result in the movement of matter and energy. Interactions, including competition and cooperation, play important roles in the activities of biological systems. Variations in components within biological systems provide a greater flexibility to respond to changes in its environment.</p>
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Enduring understanding 4.A: Interactions within biological systems lead to complex properties. All biological systems, from cells to ecosystems, are composed of parts that interact with each other. When this happens, the resulting interactions enable characteristics not found in the individual parts alone. In other words, “the whole is greater than the sum of its parts,” a phenomenon sometimes referred to as “emergent properties.” Interactions between populations within communities also lead to complex properties. As environmental conditions change in time and space, the structure of the community changes both physically and biologically, resulting in a mosaic in the landscape (variety or patterns) in a community. Communities are comprised of different populations of organisms that interact with each other in either negative or positive ways (e.g., competition, parasitism and mutualism); community ecology seeks to understand the manner in which groupings of species are distributed in nature, and how they are influenced by their abiotic environment and species interactions. The physical structure of a community is affected by abiotic factors, such as the depth and flow of water in a stream, and also by the spatial distribution of organisms, such as in the canopy of trees. The mix of species in terms of both the number of individuals and the diversity of species defines the structure of the community. Mathematical or computer models can be used to illustrate and investigate interactions of populations within a community and the effects of environmental impacts on a community. Community change resulting from disturbances sometimes follows a pattern (e.g., succession following a wildfire), and in other cases is random and unpredictable (e.g., founder effect). At the ecosystem level, interactions among living organisms and with their environment result in the movement of matter and energy. Ecosystems include producers, consumers, decomposers and a pool of organic matter, plus the physiochemical environment that provides the living conditions for the biotic components. Matter, but not energy, can be recycled within an ecosystem via biogeochemical cycles. Energy flows through the system and can be converted from one type to another, e.g., energy available in sunlight is converted to chemical bond energy via photosynthesis. Understanding individual organisms in relation to the environment and the diverse interactions that populations have with one another (e.g., food chains and webs) informs the development of ecosystem models; models allow us to identify the impact of changes in biotic and abiotic factors. Human activities affect ecosystems on local, regional and global scales.

Essential knowledge 4.A.5: Communities are composed of populations of organisms that interact in complex ways.

- a. The structure of a community is measured and described in terms of species composition and species diversity.
- b. Mathematical or computer models are used to illustrate and investigate population interactions within and environmental impacts on a community. Examples: Predator/prey relationships spreadsheet model, Symbiotic relationships, Graphical representation of field data, Introduction of species, Global climate change models.
- c. Mathematical models and graphical representations are used to illustrate population growth patterns and interactions. *Evidence:*
 1. Reproduction without constraints results in the exponential growth of a population.
 2. A population can produce a density of individuals that exceeds the system’s resource availability.
 3. As limits to growth due to density-dependent and density-independent factors are imposed, a logistic growth model generally ensues.
 4. Demographics data with respect to age distributions and fecundity can be used to study human populations.

LO 4.11 The student is able to justify the selection of the kind of data needed to answer scientific questions about the interaction of populations within communities.

LO 4.12 The student is able to apply mathematical routines to quantities that describe communities composed of populations of organisms that interact in complex ways.

LO 4.13 The student is able to predict the effects of a change in the community's populations on the community.

Essential knowledge 4.A.6: Interactions among living systems and with their environment result in the movement of matter and energy.

a. Energy flows, but matter is recycled.

b. Changes in regional and global climates and in atmospheric composition influence patterns of primary productivity.

c. Organisms within food webs and food chains interact.

d. Food webs and food chains are dependent on primary productivity.

e. Models allow the prediction of the impact of change in biotic and abiotic factors.

Evidence:

1. Competition for resources and other factors limits growth and can be described by the logistic model.

2. Competition for resources, territoriality, health, predation, accumulation of wastes and other factors contribute to density-dependent population regulation.

f. Human activities impact ecosystems on local, regional and global scales. *Evidence:*

1. As human populations have increased in numbers, their impact on habitats for other species have been magnified.

2. In turn, this has often reduced the population size of the affected species and resulted in habitat destruction and, in some cases, the extinction of species.

g. Many adaptations of organisms are related to obtaining and using energy and matter in a particular environment.

LO 4.14 The student is able to apply mathematical routines to quantities that describe interactions among living systems and their environment, which result in the movement of matter and energy.

LO 4.15 The student is able to use visual representations to analyze situations or solve problems qualitatively to illustrate how interactions among living systems and with their environment result in the movement of matter and energy.

LO 4.16 The student is able to predict the effects of a change of matter or energy availability on communities.

Enduring understanding 4.B: Competition and cooperation are important aspects of biological system. Competition and cooperation play important roles in the activities of biological systems at all levels of organization. Population interactions influence patterns of species distribution and abundance, and global distribution of ecosystems changes substantially over time.

Essential knowledge 4.B.3: Interactions between and within populations influence patterns of species distribution and abundance.

a. Interactions between populations affect the distributions and abundance of

populations. *Evidence:*

1. Competition, parasitism, predation, mutualism and commensalism can affect population dynamics.
2. Relationships among interacting populations can be characterized by positive and negative effects, and can be modeled mathematically (predator/prey, epidemiological models, invasive species).
3. Many complex symbiotic relationships exist in an ecosystem, and feedback control systems play a role in the functioning of these ecosystems. ✘ *Specific symbiotic interactions are beyond the scope of the course and the AP Exam.*

b. A population of organisms has properties that are different from those of the individuals that make up the population. The cooperation and competition between individuals contributes to these different properties.

c. Species-specific and environmental catastrophes, geological events, the sudden influx/ depletion of abiotic resources or increased human activities affect species distribution and abundance. Examples: Loss of keystone species, Kudzu, Dutch elm disease.

LO 4.19 The student is able to use data analysis to refine observations and measurements regarding the effect of population interactions on patterns of species distribution and abundance.

Essential knowledge 4.B.4: Distribution of local and global ecosystems changes over time.

a. Human impact accelerates change at local and global levels. Examples: Logging, slash and burn agriculture, urbanization, monocropping, infrastructure development (dams, transmission lines, roads), and global climate change threaten ecosystems and life on Earth. More examples: An introduced species can exploit a new niche free of predators or competitors, thus exploiting new resources, Introduction of new diseases can devastate native species or populations (Dutch elm disease, potato blight, small pox and Native Americans).

b. Geological and meteorological events impact ecosystem distribution. *Evidence:*

1. Biogeographical studies illustrate these changes. Examples: El Niño, Continental drift, Meteor impact on dinosaurs.

LO 4.20 The student is able to explain how the distribution of ecosystems changes over time by identifying large-scale events that have resulted in these changes in the past.

LO 4.21 The student is able to predict consequences of human actions on both local and global ecosystems.

Enduring understanding 4.C: Naturally occurring diversity among and between components within biological systems affects interactions with the environment. Diversity of species within an ecosystem may influence the stability of the ecosystem. Ecosystems with little species diversity are often less resilient to changes in the environment. Keystone species, predators, and essential abiotic and biotic factors contribute to maintaining the diversity of an ecosystem. For example, the removal of sea otters or mollusks can drastically affect a marine ecosystem, and the introduction of an exotic plant or animal species can likewise affect the stability of a terrestrial ecosystem.

Essential knowledge 4.C.4: The diversity of species within an ecosystem may influence the stability of the ecosystem.

a. Natural and artificial ecosystems with fewer component parts and with little diversity among the parts are often less resilient to changes in the environment.

b. Keystone species, producers, and essential abiotic and biotic factors contribute to maintaining the diversity of an ecosystem. The effects of keystone species on the

ecosystem are disproportionate relative to their abundance in the ecosystem, and when they are removed from the ecosystem, the ecosystem often collapses.

LO 4.27 The student is able to make scientific claims and predictions about how species diversity within an ecosystem influences ecosystem stability.

Green Club Efforts are aligned to the Regents Living Environment Standards and to the AP Biology Curriculum.

Project 1: Student Advocacy Day for the Environment Essential knowledge 4.B.4: Distribution of local and global ecosystems changes over time. Human impact accelerates change at local and global levels. (AP Biology Curriculum)

Project 2: Cafeteria Waste and Organics Collection As human populations have increased in numbers, their impact on habitats for other species have been magnified

Project 3: Recycling Program Advisory Lesson Human activities impact ecosystems on local, regional and global scales (AP Biology Curriculum)

Project 4: Visual Arts Recycled Art Project Human activities impact ecosystems on local, regional and global scales (AP Biology Curriculum)

Project 5: Sustainability Poster Contest Disruptions to ecosystems impact the dynamic homeostasis or balance of the ecosystem. (AP Biology Curriculum)

Project 6: National Wildlife Federation Green STEM Guidebook Entry Organisms within food webs and food chains interact. (AP Biology Curriculum)

Project 7: Bottle and Can Collection Human activities impact ecosystems on local, regional and global scales (AP Biology Curriculum)

Project 8: Recycling and Reuse Collection Drives Human activities impact ecosystems on local, regional and global scales (AP Biology Curriculum)

Project 9: Community Cleanups and Tree Giveaways 7.1b Natural ecosystems provide an array of basic processes that affect humans. Those processes include but are not limited to: maintenance of the quality of the atmosphere, generation of soils, control of the water cycle, removal of wastes, energy flow, and recycling of nutrients. Humans are changing many of these basic processes and the changes may be detrimental. (Regents Curriculum)

Project 10: IYEYS Conference Participation 7.3a Societies must decide on proposals which involve the introduction of new technologies. Individuals need to make decisions which will assess risks, costs, benefits, and trade-offs.

Project 11: Partner School Collaboration 6.1e In any particular environment, the growth and survival of organisms depend on the physical conditions including light intensity, temperature range, mineral availability, soil/rock type, and relative acidity (Regents Curriculum) Essential knowledge 4.B.3: Interactions between and within populations influence patterns of species distribution and abundance. Many complex symbiotic relationships exist in an ecosystem, and feedback control systems play a role in the functioning of these ecosystems. (AP Biology Curriculum)

Project 12: Doc Day Screenings 7.3b The decisions of one generation both provide and limit the range of possibilities open to the next generation (Regents Curriculum) Keystone species, producers, and essential abiotic and biotic factors contribute to maintaining the diversity of an ecosystem. The effects of keystone species on the ecosystem are disproportionate relative to their abundance in the ecosystem, and when they are removed from the ecosystem, the ecosystem often collapses. (AP Biology Curriculum)

Project 13: Digital Globe 7.1c Human beings are part of the Earth's ecosystems. Human activities can, deliberately or inadvertently, alter the equilibrium in ecosystems. Humans modify ecosystems as a result of population growth, consumption, and technology. Human destruction of habitats through direct harvesting, pollution, atmospheric changes, and other factors is threatening current global stability, and if not addressed, ecosystems may be irreversibly affected.

Future Plans

This month, the Green Club will take part in a Bike to Work Challenge. They hope to create an entry for the Green Team Video Contest. Find out more here:

(<http://schools.nyc.gov/community/facilities/sustainability/coordinators/contests/VideoContest.htm>)

Green Clubbers have been invited to carry out surveying for a plastic mapping project to map the litter in New York City. This will be a valuable resource for city planners. On a more ambitious level, the Green Club is saving to purchase a permanent Greenhouse for its garden spaces. It would have to be strong enough to withstand sometimes heavy Northeastern snows and winds. A Golden Apple Award would help make this dream possible.

Overview



Maspeth High School was founded in 2011 with three core values: truth, goodness, and beauty. The yearly Golden Apple entry is the Green Club's way of demonstrating its commitment to these values. Although the school is quite young, it has accomplished a lot in its short existence. Excellence at the school has become more of an expectation than a surprise. With a devoted team of teachers and support staff, Maspeth High School offers students a chance to reach for excellence themselves, as you can read in the pages above. The club's thirteen projects in this *DSNY Reduce and Reuse Challenge* document are the result of the club's belief in hard work, citizenship, and sustainability. I would like to thank Maspeth Principal Khurshid Abdul-Mutakabbir for his vision and support. I would also like to thank the Department of Sanitation New York for offering the Golden Apple contest to New York City students. The contest and the awards have elevated the club and given it purpose each year.