

TrashMasters!™  
Team Up to Clean Up



High School Division  
Manhattan Borough  
& Citywide Winner


**Louis D. Brandeis  
HS 470**


NEW YORK CITY DEPARTMENT OF SANITATION  
**2004 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, Michael J. Bloomberg, Mayor  
Department of Sanitation, John J. Doherty, Commissioner

  
John J. Doherty, Commissioner  
June, 2004



*TEAM UP TO CLEAN UP 2004*

*We have been working as a team since 2001 cleaning up and planting the upper west side community with the sole purpose of keeping the neighborhood in which our school resides as a source of pride for all.*

*In keeping with this on going commitment, we are actively working within our community to keep it clean while taking on new projects in which we can improve our green spaces.*

*This year our project **GROUNDS FOR IMPROVEMENT** is another way we can Team Up with our community stores to improve our tree pits and garden spaces by recycling their coffee grounds.*

*We hope you enjoy our project as much as we have.*



In the fall of 2003, we had our annual fall clean up and bulb planting . We invited community leaders and residents to join us in planting 1000 bulbs for our annual display. During this event while throwing out the coffee grounds the idea about composting with coffee grounds took **ROOT!**

*MaxLance Booker*



*Louis D. Brandeis High School*  
*FALL BULB PLANTING*  
*&*  
*GARDEN CLEAN UP*

*SATURDAY, October 25<sup>th</sup>, 2003*  
*10 a.m. until 1 p.m.*

*Please join us for our fall activities*

*Refreshments courtesy of*

*Councilperson Gale Brewer*  
*District 6*





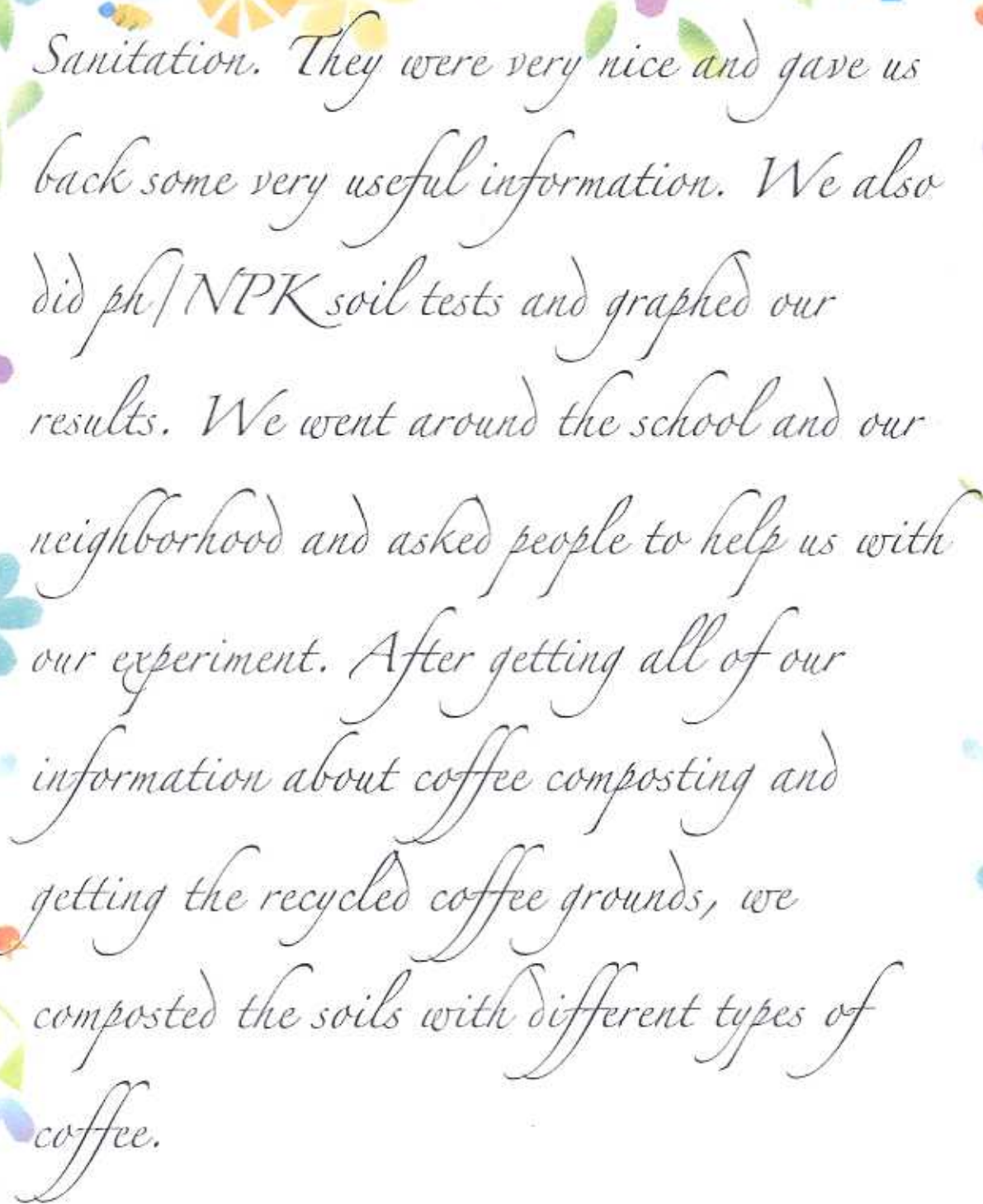




*We started with an idea that we could use recycled coffee grounds to compost garden areas at school. We had no prior knowledge, so we went to the experts for advice.*

*First, we researched information about coffee composting. Then sent some e-mails to people at Cornell University stating that we needed some help and information about composting coffee grounds indoors. We then went to parks, BBG, Councils on the Environment, and the Department of*



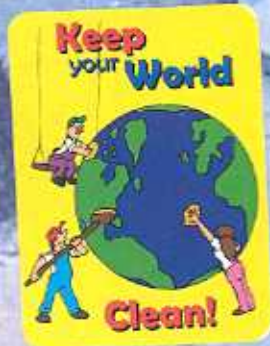
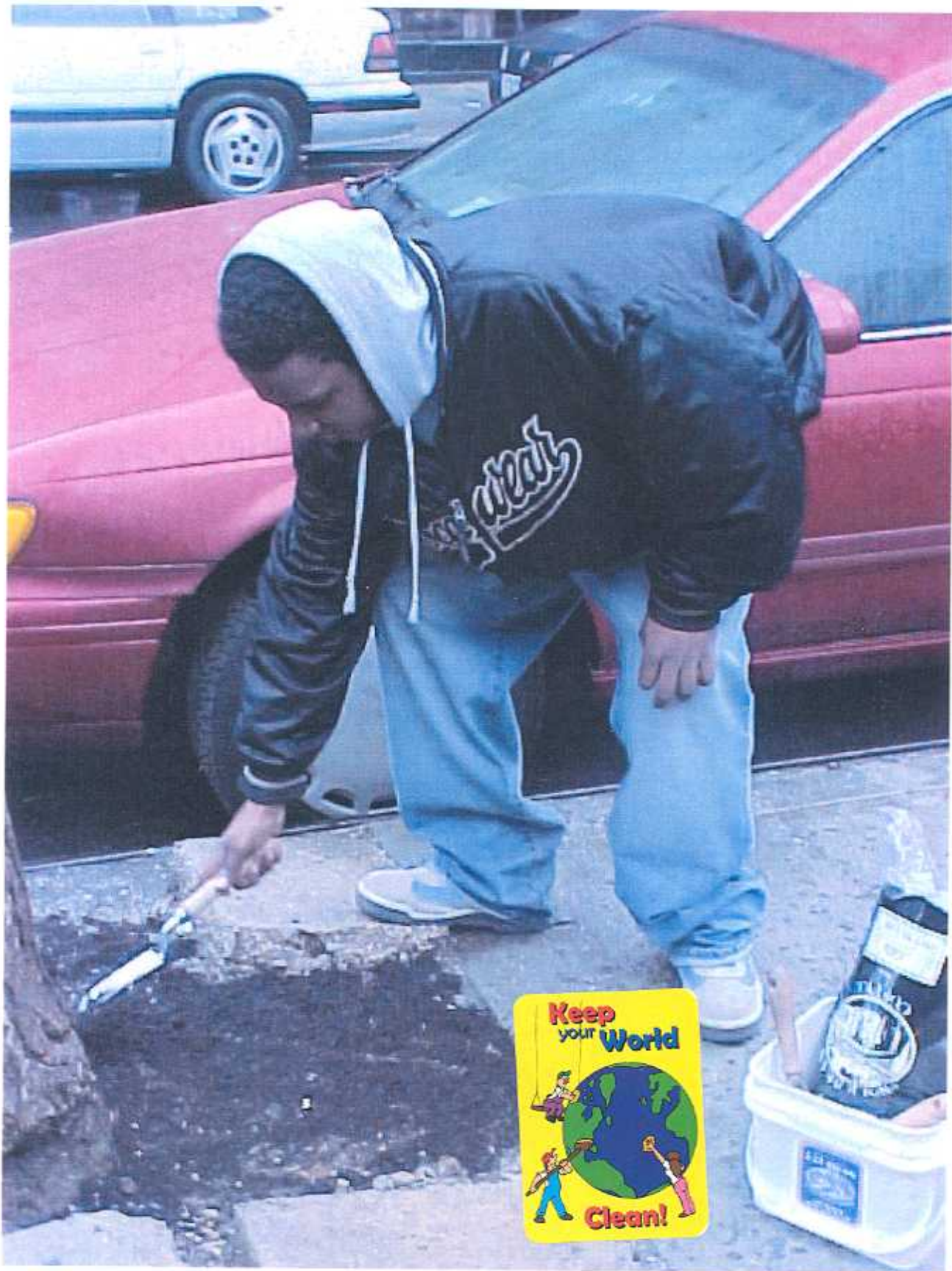


*Sanitation. They were very nice and gave us back some very useful information. We also did pH/NPK soil tests and graphed our results. We went around the school and our neighborhood and asked people to help us with our experiment. After getting all of our information about coffee composting and getting the recycled coffee grounds, we composted the soils with different types of coffee.*

*As a result of this, we have learned a lot of things. We decided that the azaleas in our inner courtyard performed best. We also learned that not all plants benefit from coffee composting. Since coffee grounds are highly acidic, we would need to put them in plants that require a lower pH.*

*Leslyn Caleb & Shekira Baptiste*





Tiffany Calhoun  
 Brandon George  
 Odanis Salazar  
 Alberto Barrera  
 Jess H. Anthony  
 Randall Ramirez  
 Kevin Farmer  
 Demetrius Johnson  
 Charlene News  
 Taty Trinidad  
 Large Nancy  
 Juanita Young  
 Melissa Demas  
 Charlotte Mejia  
 Shekura Baptiste  
 Hester Figueroa

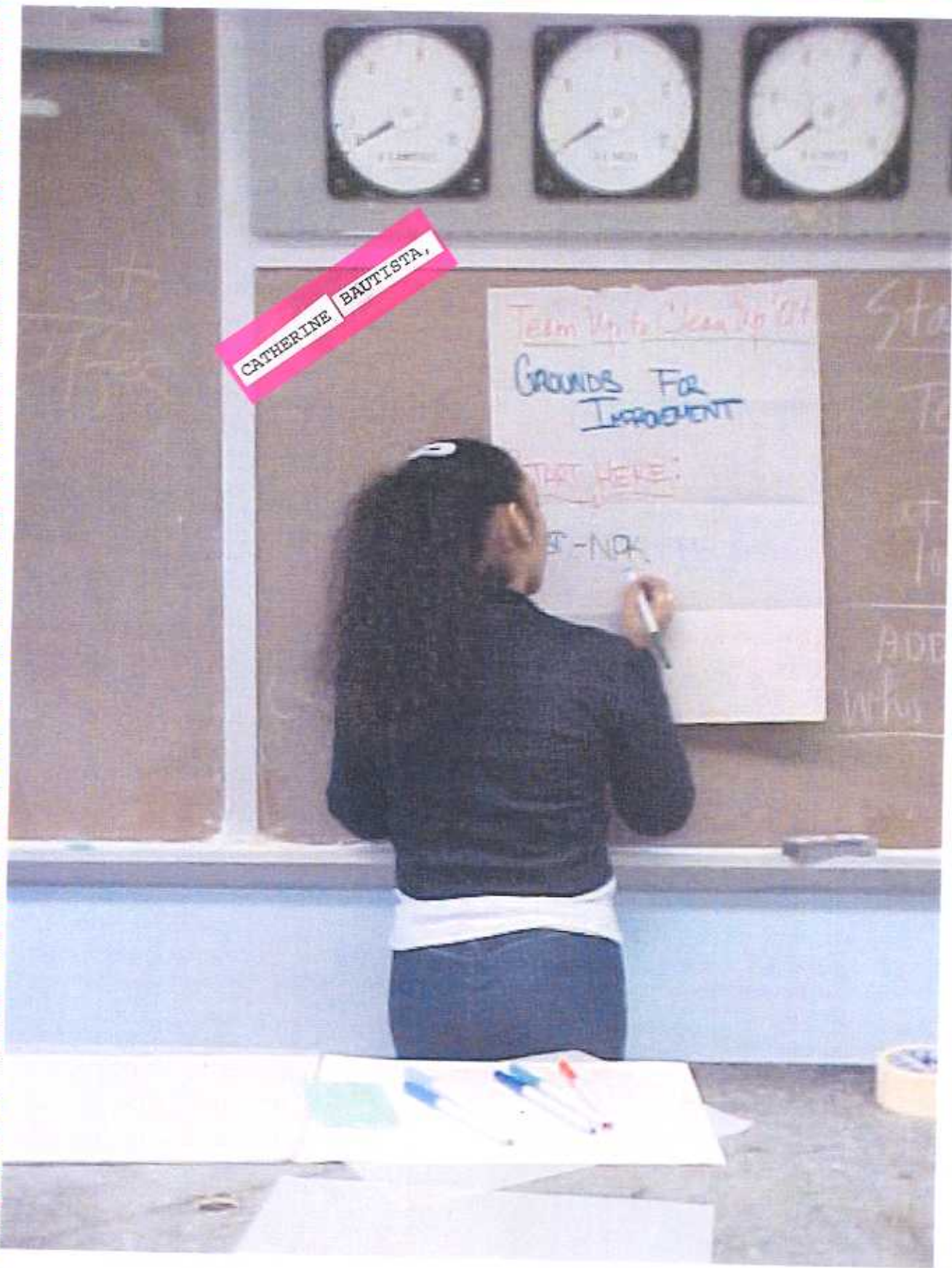
**OUR  
 TEAM  
 2004**

Leshlyn Cabib  
 Julie Matthews  
 Mario Leazard  
 Jonathan Morel  
 Maryi De Leon  
 Ray Rodriguez  
 Chanel Meher  
 Carl Meher  
 Mery Gomez  
 Bienlis Paulino  
 Dikys Stanislaus  
 Polina Luciano  
 Erica Fernandez  
 Catherine Bautista  
 Sasha MacKinnon  
 Daniel Aparicio  
 Gabriel Greene  
 Justin Edwards  
 Dennis Alford  
 Keshelle Phillips  
 Ernest W. Pickett  
 Willow Young  
 Justine Condono  
 Ms. Munchelond  
 Malena Francisco  
 Zethon  
 2004 Maceo  
 VATEL  
 DRAHME  
 Antonio  
 Sabrina Quiles  
 Victor Alvarez  
 Jose Fina Delgado  
 Deborah Weaver  
 MacLance Booker  
 Debra L. Dozier  
 Robert Glennon  
 Jessica De Leon



# **BRAINSTORMING**

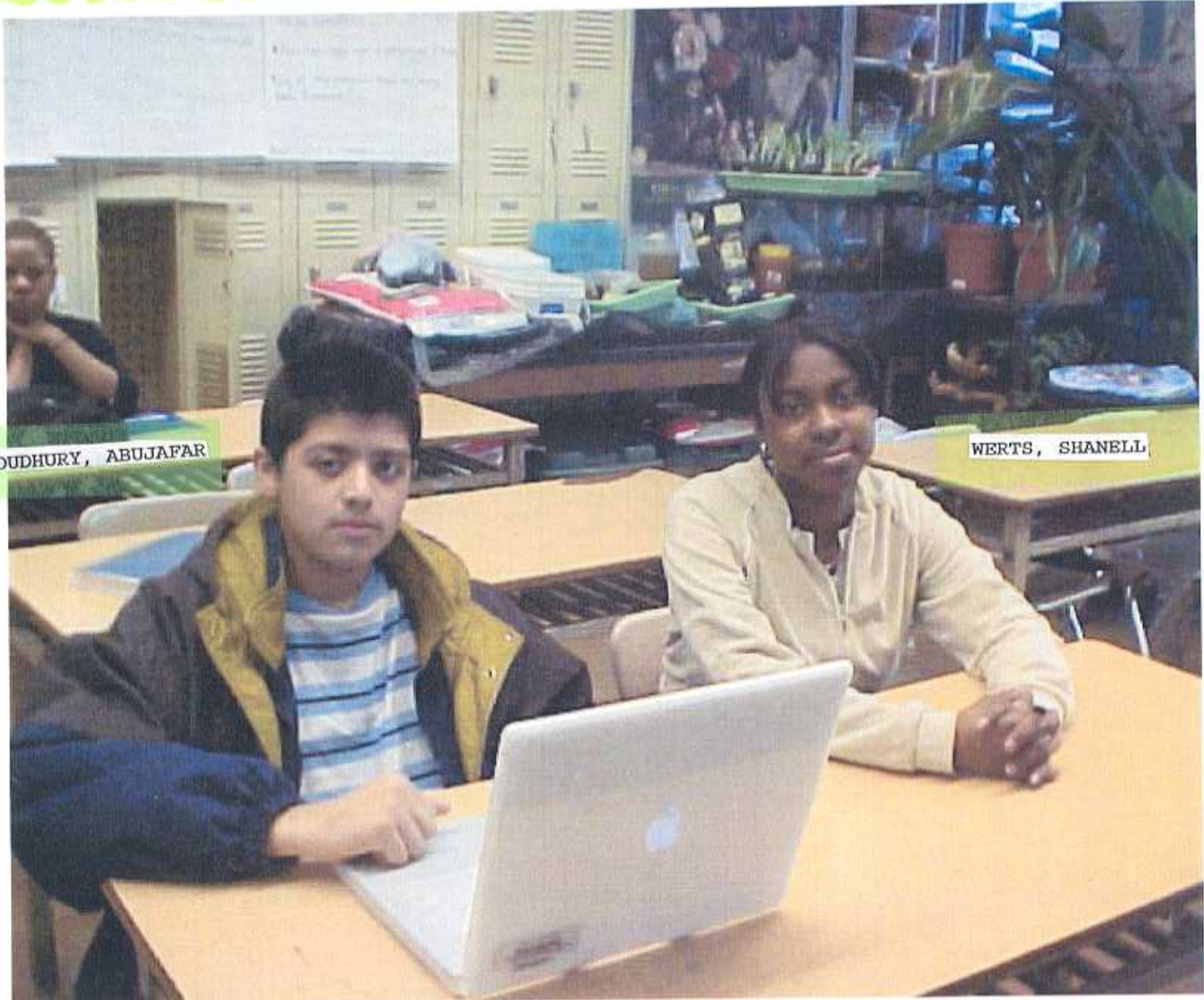
CATHERINE BAUTISTA





**HORTICULTURE  
STUDENTS**

**DESIGN TEAM**



CHOU DHURY, ABUJAFAR

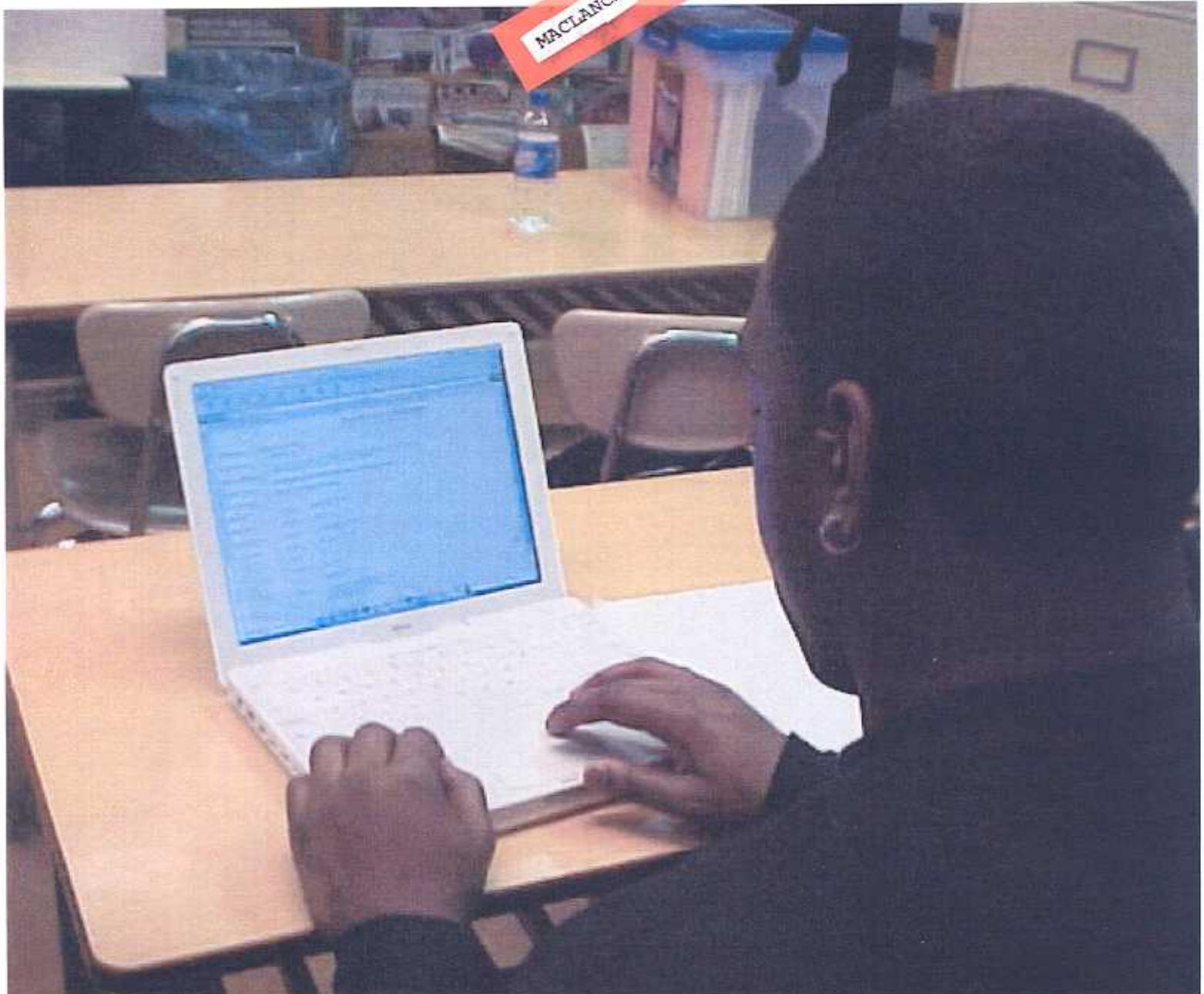
WERTS, SHANELL



**NICOLE MATTHEWS**



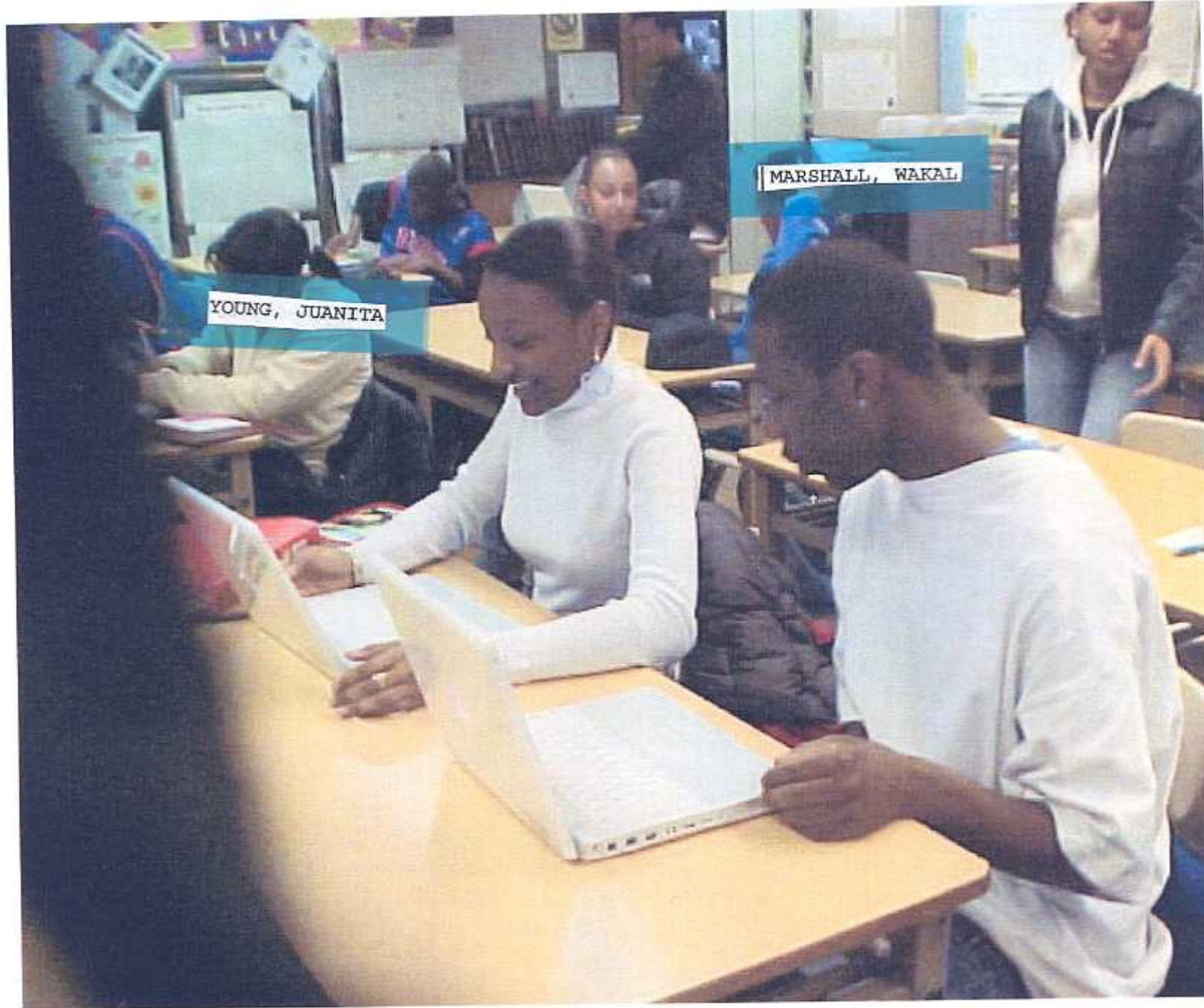
MACLANE BOOKER,

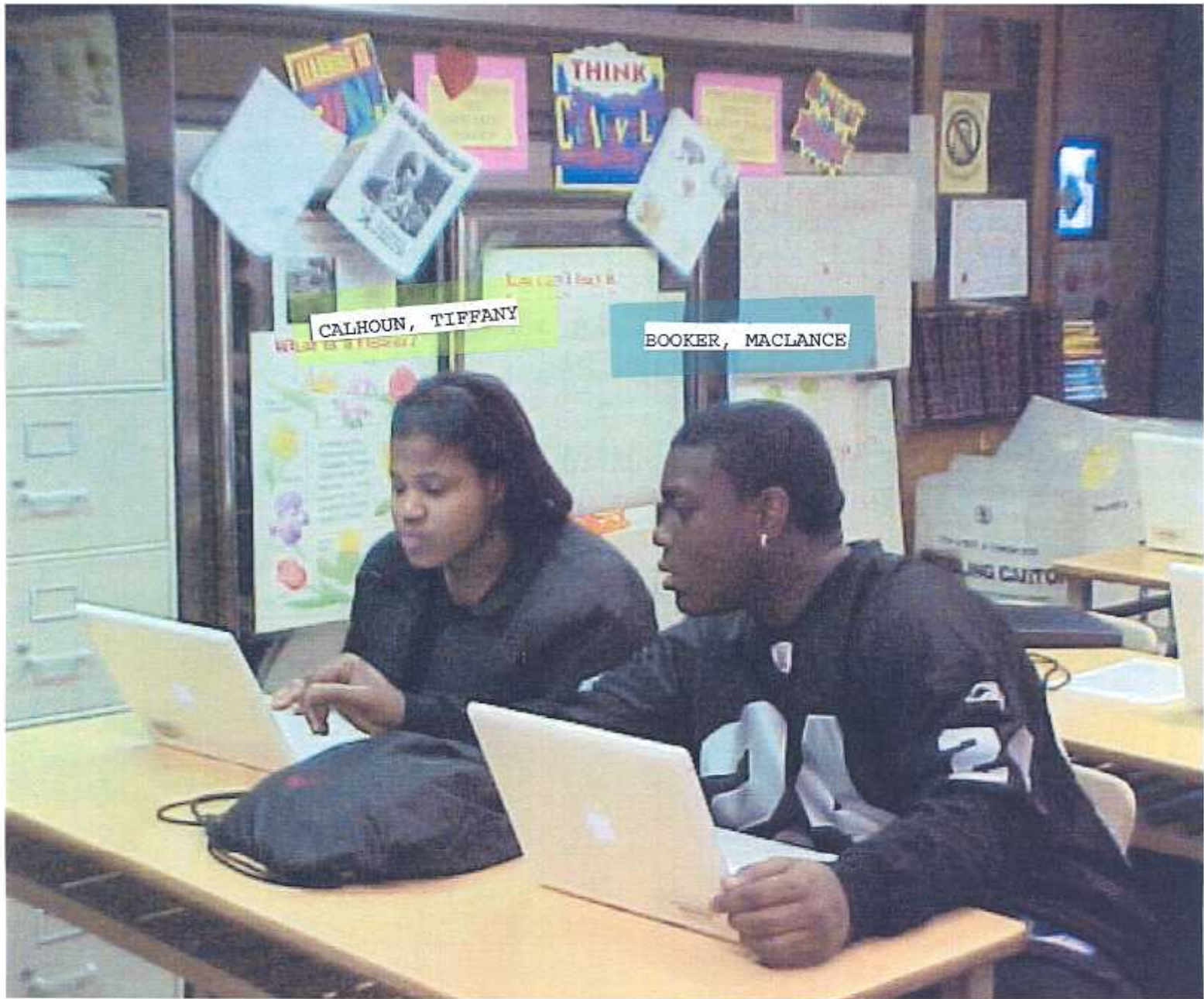


**OUR TEAM UP STUDENTS  
SURFING  
THE  
NET**

**FOR  
RESEARCH  
ON**

**COFFEE COMPOSTING**





CALHOUN, TIFFANY

BOOKER, MACLANCE

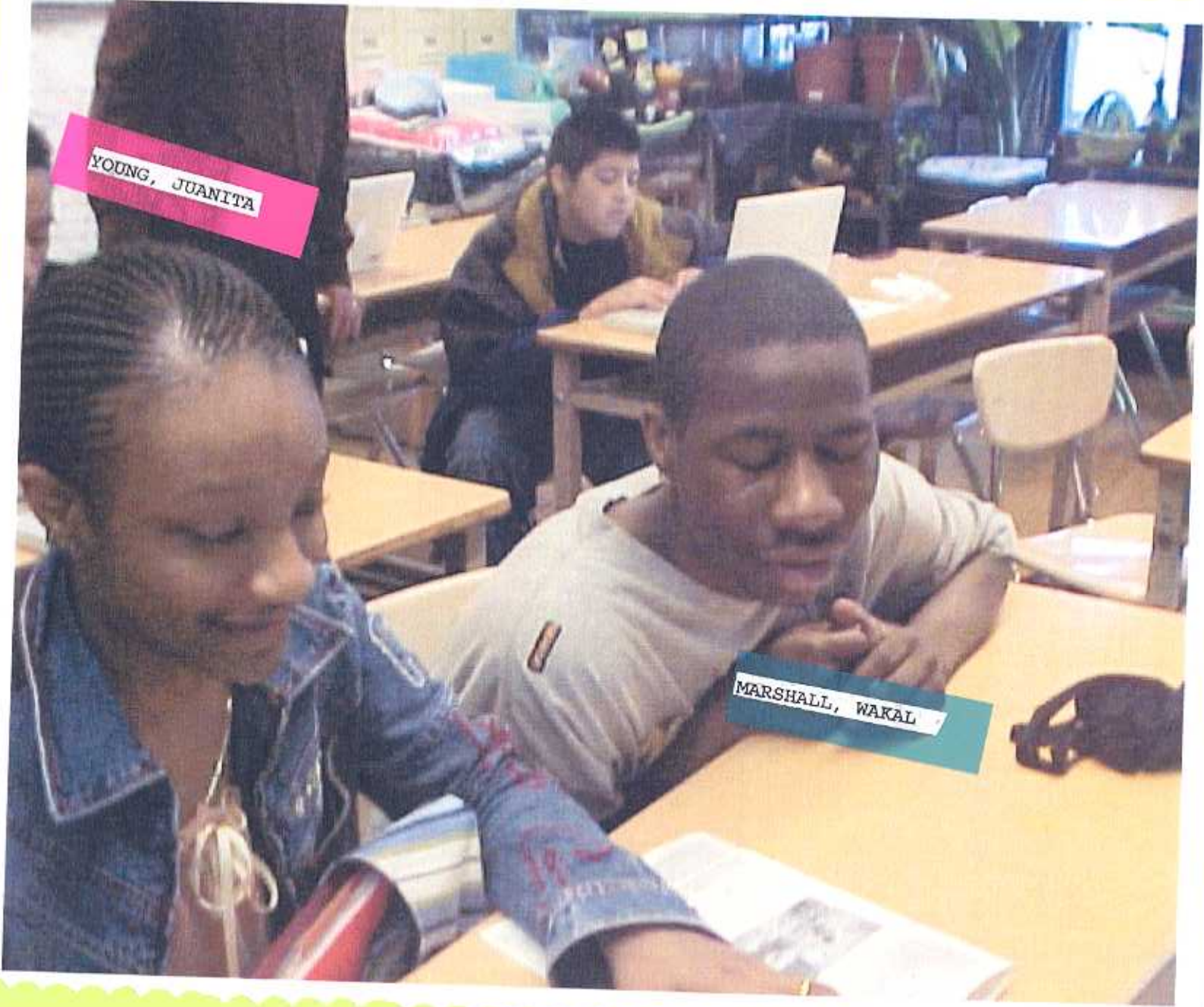


BOOKER, MACLANCE

YOUNG, JUANITA

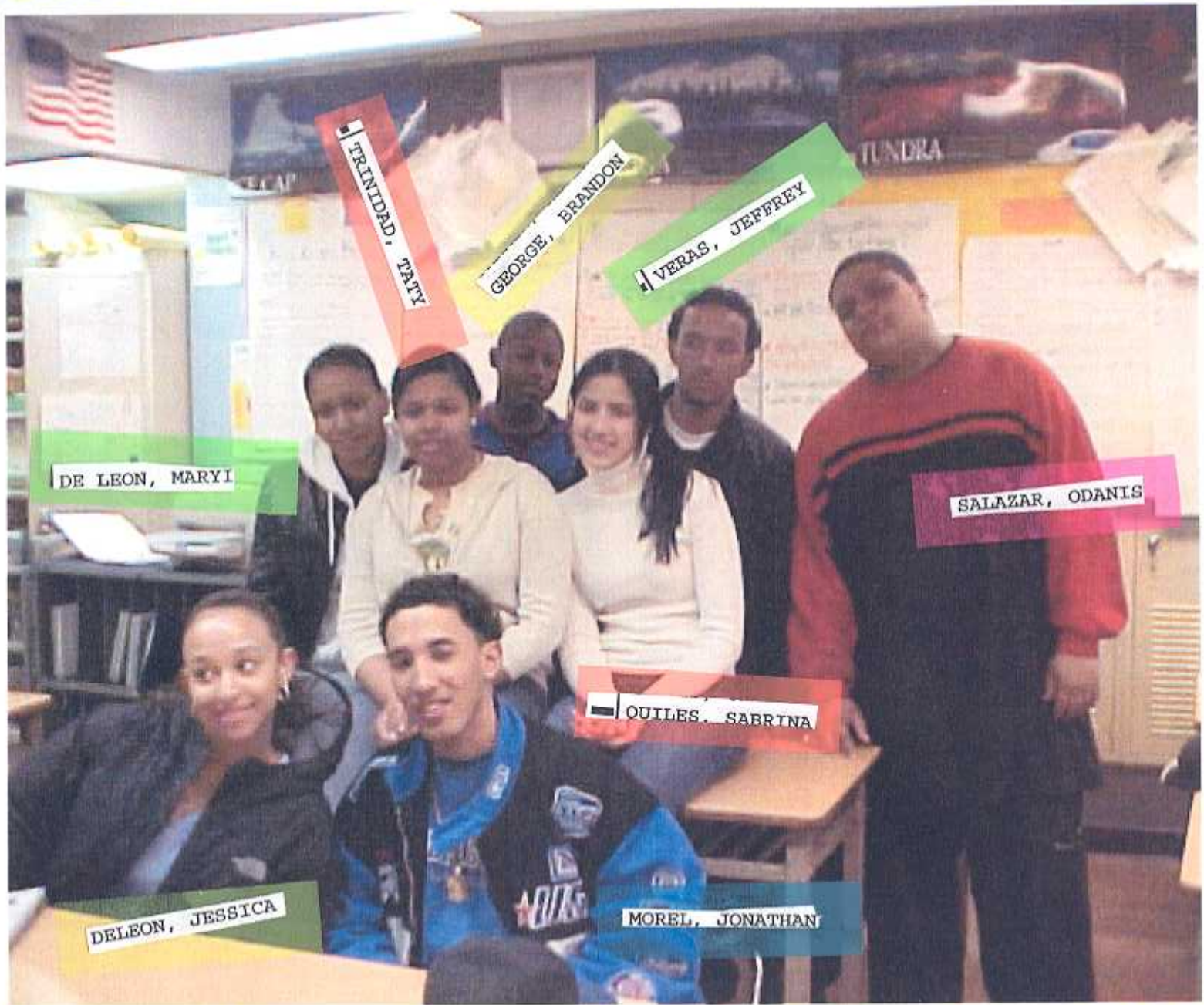
CALEB, LESLYN

BAPTISTE, SHEKIRA



YOUNG, JUANITA

MARSHALL, WAKAL



TRINIDAD, TATY

GEORGE, BRANDON

VERAS, JEFFREY

DE LEON, MARYI

SALAZAR, ODANIS

OUILES, SABRINA

DELEON, JESSICA

MOREL, JONATHAN





# **EXPERT ADVICE**



# New York City composting guide



What you need to know to start  
outdoor composting right now,  
right here in New York City



Sustainable Body

Sustainable Business

Sustainable Community

Sustainable Planet

## Coffee and gardening

Every day across America, Asia and Europe, millions of pots of coffee and tea are brewed, and the millions of pounds of wet grounds, filters and bags thrown in the trash. This is both wasteful and foolish.

Coffee by-products can be used in the garden and farm as follows:

- Sprinkle used grounds around plants before rain or watering, for a slow-release nitrogen.
- Add to compost piles to increase nitrogen balance. Coffee filters and tea bags break down rapidly during [composting](#).
- Dilute with water for a gentle, fast-acting liquid fertilizer. Use about a half-pound can of wet grounds in a five-gallon bucket of water; let sit outdoors to achieve ambient temperature.
- Mix into soil for houseplants or new [vegetable beds](#).
- Encircle the base of the plant with a coffee and eggshell barrier to repel pests.
- If you are into vermi-posting, feed a little bit to your worms.

Let us know how you use coffee in the garden!

Include your e-mail if you want a response.

It is easy to collect coffee grounds from your office. Just put an empty coffee can next to the coffee maker. Empty once a week or as needed. Once people get wind of what you're doing, don't be surprised if others want the grounds, too!

Mike Theuer got tired of throwing away all the coffee grounds from his small cafe. So he started a fertilizer company of his own. [Grow Joe](#) uses coffee grounds and other ingredients to make a powerful natural fertilizer. Mike is also experimenting with ways to re-use plastic nursery pots.

### Testimonials:

- I had heard about coffee grounds being used in the garden and i tried a small experiment at home, brewing espresso, discarding grounds, then using them around the house in houseplants -- i was AMAZED at the results!! The leaves of the plants all became very shiny, glossy, all the plants responded incredibly well! From now on, I'm saving grounds and will use outside in my garden this summer. Did Starbucks respond to you yet? It's such a good idea!
- I mix it with my potting soil...and the results were fantastic. Every flower I grew turned out AMAZING.
- I maintain 360+ roses at the Historic Olivas Adobe in Ventura, California. The results have been stunning. I pick up used grounds from two Starbucks. I am a Parks Maintenance Lead worker.
- I am Barista at Starbucks and am interested in starting a coffee composting program. It is a Starbucks policy to offer spent espresso grinds to anyone who asks for them. I personally think that espresso would be the best choice as they are ground finer than the coffee grinds.
- I add the coffee grounds and the filter and tea bags to the compost and in a very short time they disappear to make beautiful, black, rich compost. Worms in the worm farm love the coffee grounds.
- I use coffee grounds as a mulch for container plants. I notice it repels water and seems to have a beneficial effect on fungus gnats and other nasties that need moist soil. It has also done wonders for a potted hydrangea that suffers from too much dampness at the soil level.
- A natural repellent for root maggots. Spread liberally before planting and dig in slightly.
- I use coffee grounds around my hybrid tea roses, and I also put coffee grounds under my hydrangeas, to make the blooms really bright

Subj: **coffee composting**  
 Date: 3/31/04 3:02:54 PM Eastern Standard Time  
 From: [ronnitbv@hotmail.com](mailto:ronnitbv@hotmail.com)  
 To: [Brandeis\\_hort\\_students@yahoo.com](mailto:Brandeis_hort_students@yahoo.com)  
 CC: [Cumdio@aol.com](mailto:Cumdio@aol.com)  
 Sent from the Internet ([Details](#))



Hello Shekira,

I am not sure if you got my last email because it bounced back to me a few times, so I am sending a copy of this to Ms. Mulholland too.

#### COFFEE COMPOSTING:

Using coffee grounds for fertilization is a great way to recycle used coffee. It's important to remember that coffee is naturally acidic, so how you use it will depend on what plants you are applying it to. Each plant has a preferred pH level for optimum growth, and you should know if your plant(s) are acid-loving or not. Some acid-loving plants include azaleas, blueberries, ferns and conifers, all of which are found in Theodore Roosevelt Park (where I work).

If your plants are acid-loving, you can apply the used coffee grounds directly to the base of the plant. Just sprinkle some of the coffee grounds on the ground around the plant. Don't pile it up by the stem - spread it out a little further. Remember that you want to put the coffee grounds above the root system - it's the roots that absorb the nutrients and water, not the stem. So when you irrigate (or it rains), the water will wash all the nutrients down into the ground where the roots are.

If your plants are not acid-loving, you do not want to apply the coffee grounds directly to the plant. Instead, you will use the coffee grounds in a compost, together with "brown" elements like dead leaves and dried grass, to make a well-balanced fertilizer.

Some other ideas are:

- you can use coffee grounds (not too much) in a worm bin together with other compost items as a food source for the worms.
- you can make a liquid fertilizer from coffee grounds by soaking one half-pound can of coffee grounds in a five-gallon bucket of water at room temperature.
- you can mix coffee grounds with eggshells and circle the base of a plant to repel some pests.
- be careful when using any coffee grounds around new seedlings. They are very sensitive, and can burn from this.

I hope this is helpful. Good luck, and feel free to contact me at any time!  
 Ronnit

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[Find a broadband plan that fits. Great local deals on high-speed Internet access.](#)



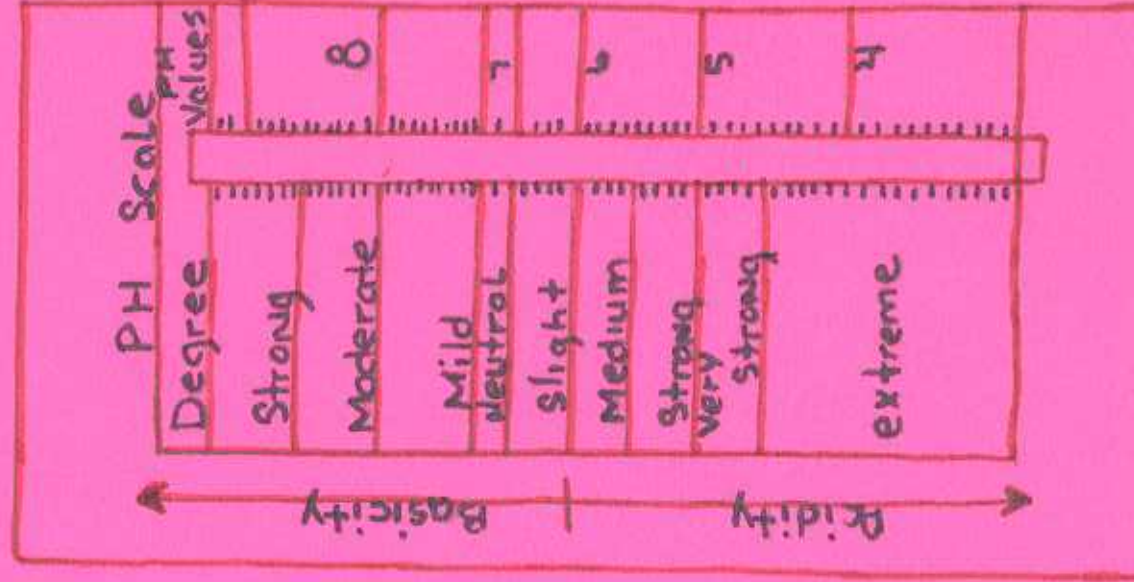
**HORTICULTURE  
PERIOD 2**

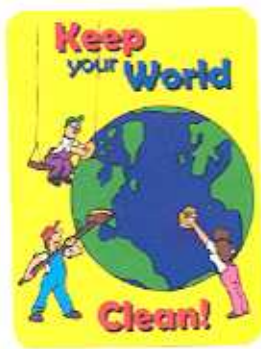
**SOIL TESTING  
&  
GRAPHING RESULTS**

# Brandeis Students Collect Soil Samples



MORGAN CHEATHAM





DILYS STANISLAUS,

SASHA MCCLARIN,

BERRIOS, MELISSA

NASHEA MCCLARIN,





# Soil Samples

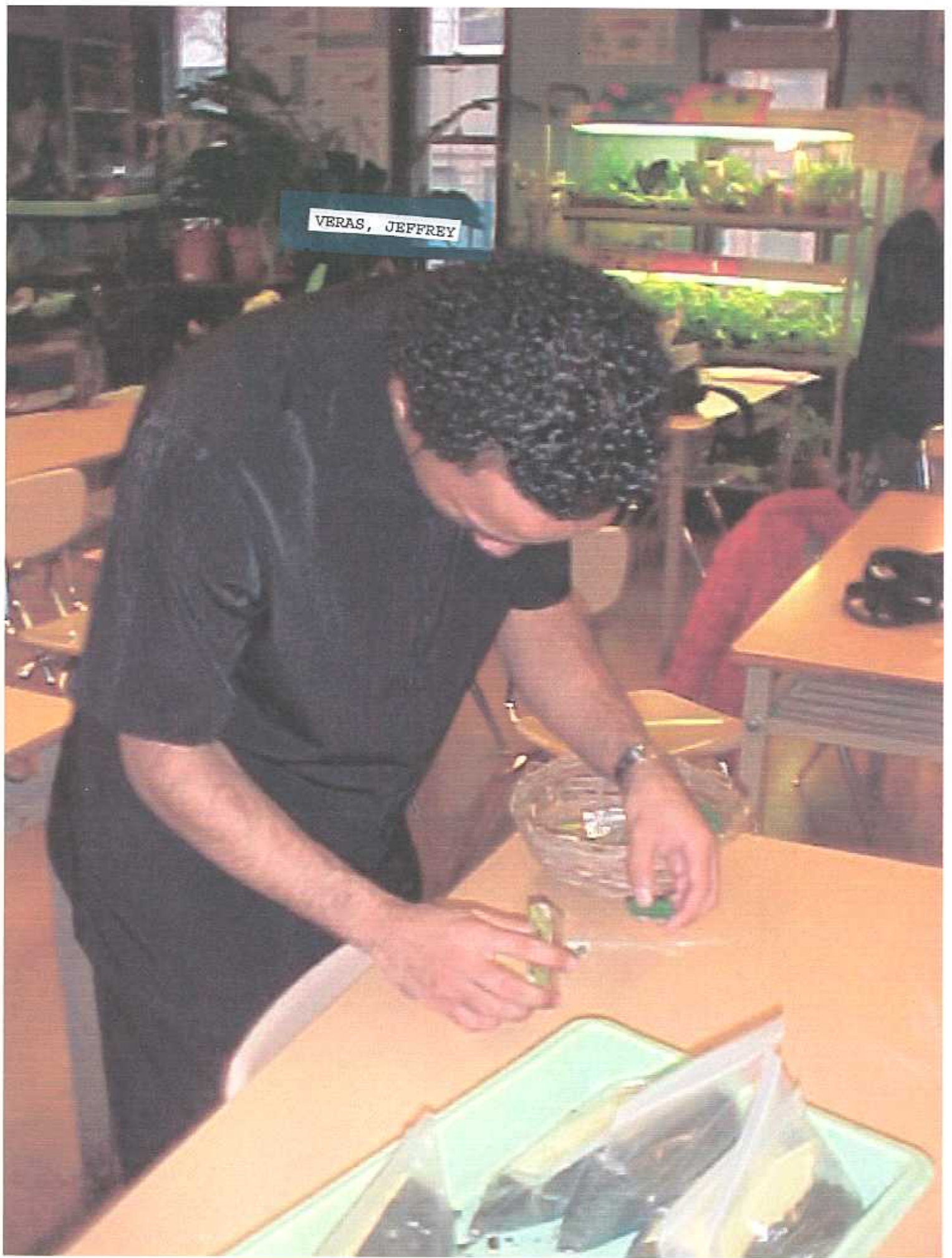
## - West 85th Street

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- Baseline soil samples that measure existing Ph levels in the soil must be taken first.
- How will the introduction of recycled coffee grounds effect soil Ph levels?

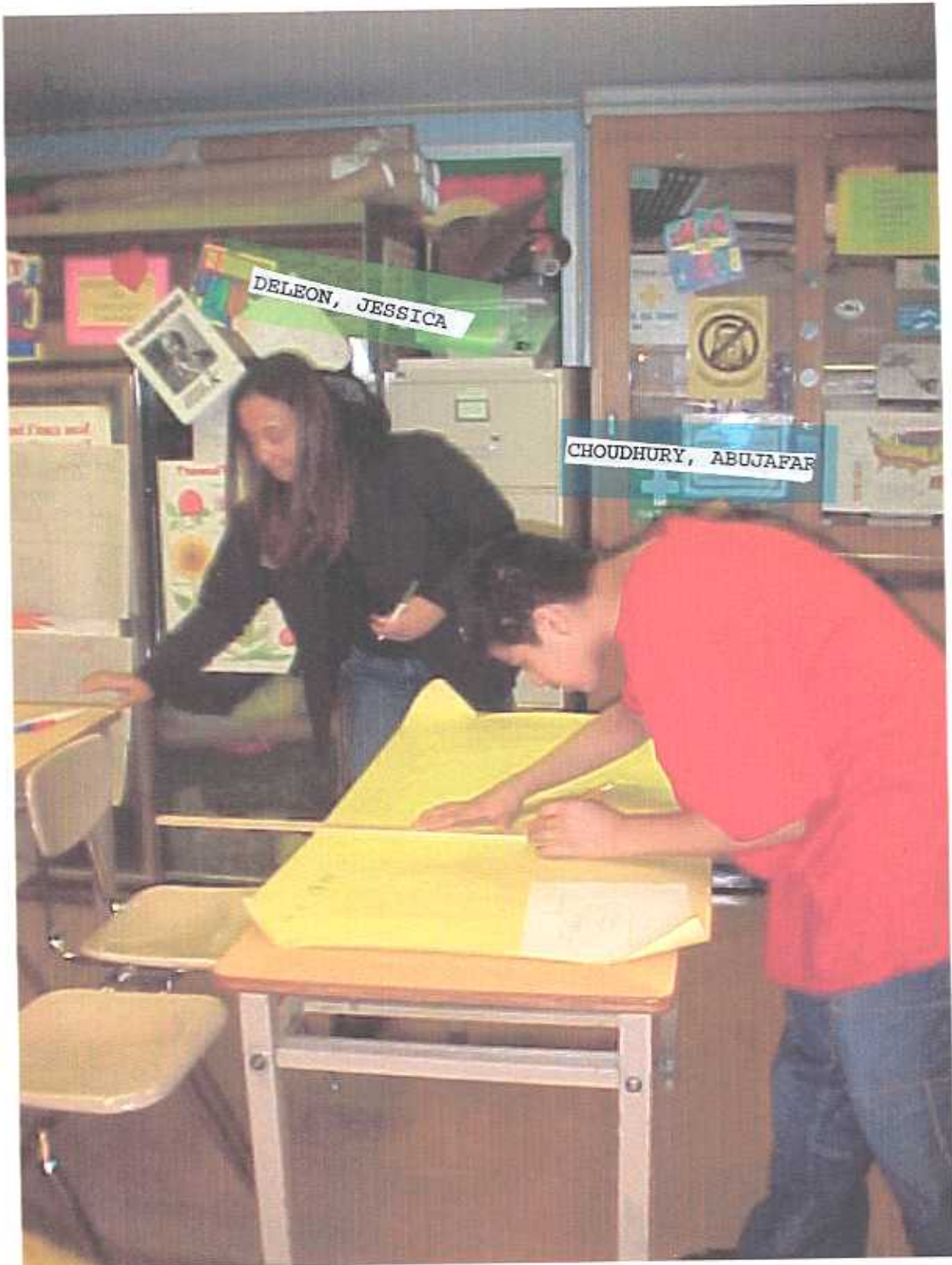


VERAS, JEFFREY





# OUR DATA



DELEON, JESSICA

CHOUDHURY, ABUJAFAR



**HORTICULTURE  
PERIOD 6**

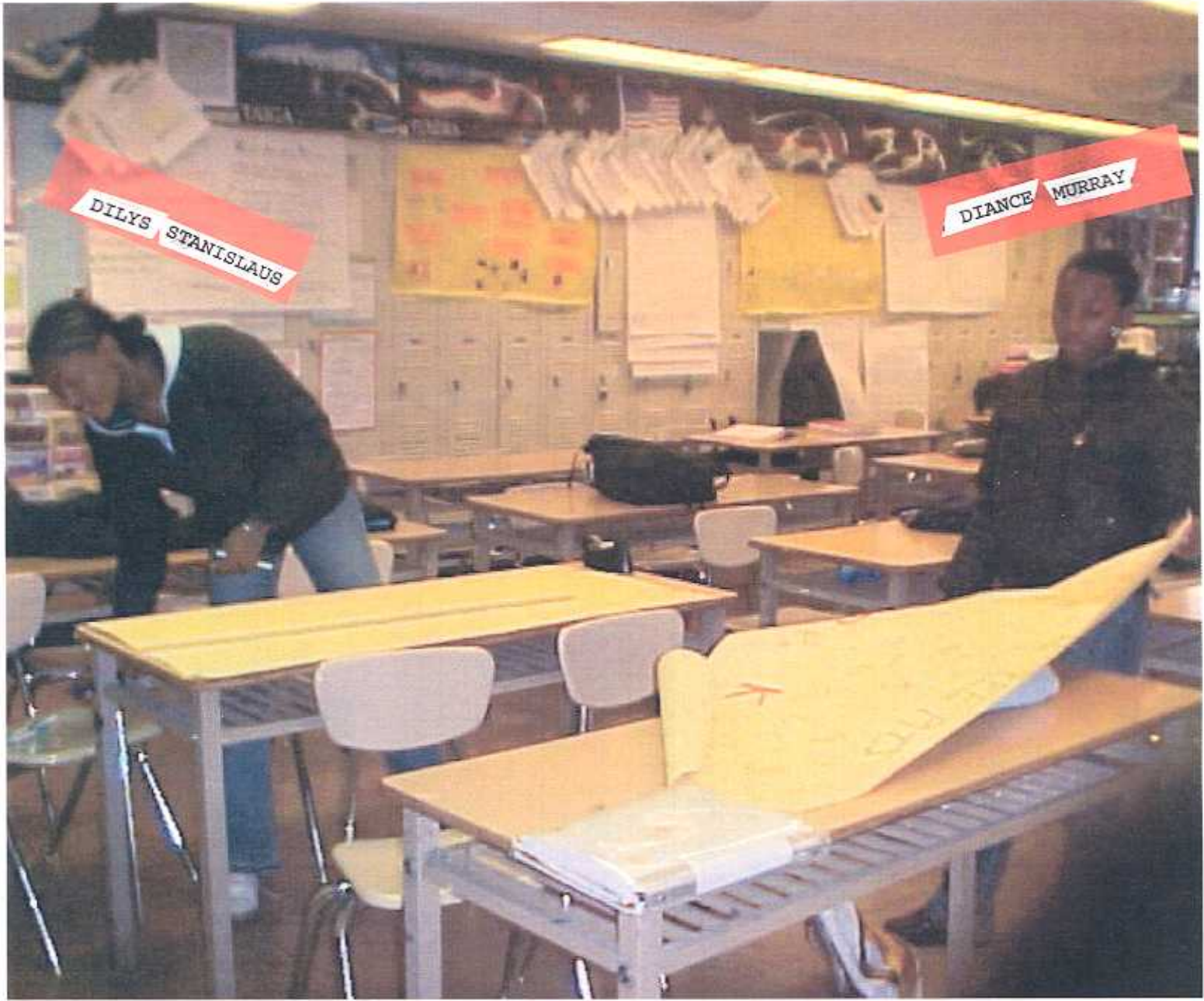
**SOIL TESTING**

**&**

**GRAPHING RESULTS**

# — Ph Scale —





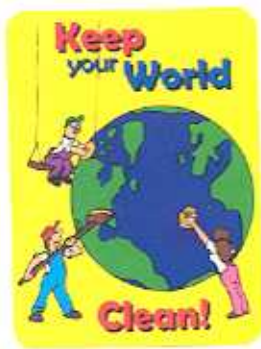
DILYS STANISLAUS

DIANCE MURRAY



**HORTICULTURE  
PERIOD 6**

**PUTTING OUR COFFEE GROUNDS  
TO THE TEST  
IN THE  
WEST 84<sup>TH</sup> STREET TREE PITS**



# PH TESTING SOIL/COFFEE MIXTURE



**HORTICULTURE STUDENTS  
PERIOD 8**

**W 84th St.**

# Soil Sample Tree Pits

<b>Tree Pits</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>
<b>Ph</b>	6.5	6.0	6.5	6.0	6.0	6.5	6.5	6.5	7.0	6.5	6.5	6.0	6.5	6.5

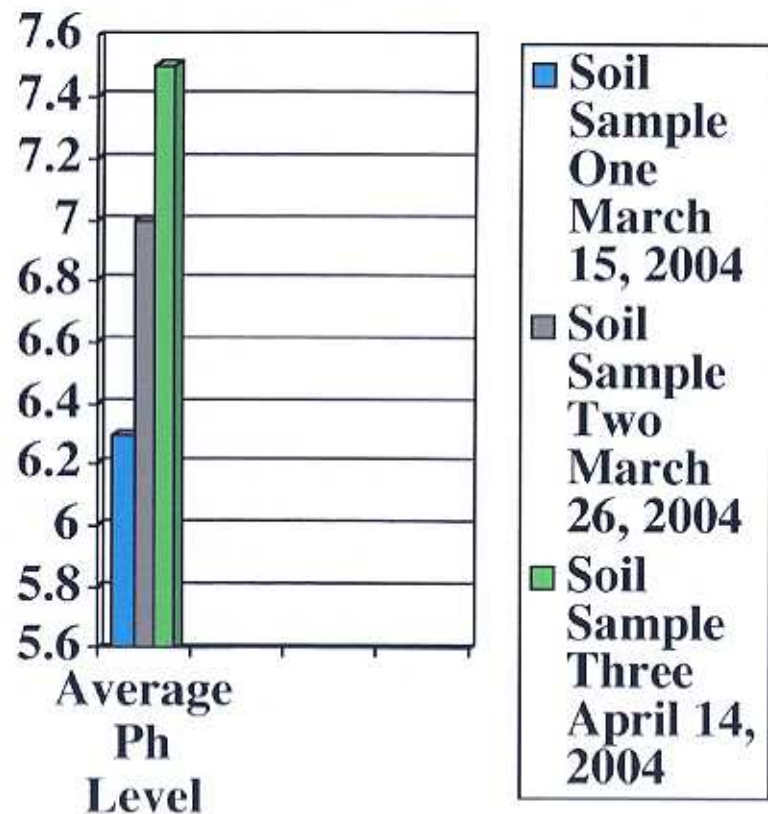
**N** N3

**P** P4

**K** K4

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# WEST 84TH STREET SOIL SAMPLES



- Students added recycled coffee grounds from neighborhood sources to Brandeis tree pits
- Students tested Ph levels in soil over a 30 day period.
- Students graphed the soil change results.



**HORTICULTURE  
PERIOD 8**

**GRAPHING RESULTS**



DANA E / DANZY

TYRONDA WEAVER,

# Soil Test Samples - Inner Courtyard

	1	2	3	4	5	6	7
Small	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Large	7.0	6.5	7.0	6.5	7.0	6.0	7.0

	N	P	K
Small	0	2	3
Large	0	3	3

**Small Average/pH: 6.5**

**Large Average/pH: 6.7**



# Large Inner Courtyard

Coffee Type	Janet	Starbucks	W. 85th St.	W. 84th St.	Cafe	Parsky	Lenny's
pH	6.0	6.0	6.5	7.0	7.5	6.5	6.0



**Average : 6.5**

Period 8  
3/29/04 (4 days later)





**STUDENT  
INTERVIEWS**

**WITH**

**OUR NEIGHBORHOOD  
COFFEE SPONSORS**

Janet's

# Community Participant Questionnaire



1. What is your name? JANET
2. What is the name of the company or store that you work for? PARISIAN
3. How long have you been employed by this company or store? 12 yr.
4. What are your duties and working hours like? MANAGER  
50 hrs.
5. What is your ethnic background and/or country of origin? ASIAN
6. Where do you live in the city or surrounding area? Jersey
7. Do you have any interest or background in gardening? YES
8. Have you heard of the *Team Up to Clean Up* program? NO
9. Have you heard that coffee grounds can help improve soil quality? Do you think there is some truth to this idea? YES . YES
10. What are some things that you would like to learn about gardening, recycling, and other means to beautify the city?

GARDENING

# PARISIAN DELI

ATM • HOT & COLD SANDWICH • FREE DELIVERY





**OUR SPONSOR**

**STARBUCK'S  
WEST 86<sup>TH</sup> STREET  
&  
COLUMBUS AVENUE  
NEW YORK CITY**



A white plastic bag with a colorful floral illustration and text. The illustration features a purple flower with yellow and green centers, a green flower with a yellow center, and two red flowers. The text is printed in a bold, serif font.

**FREE**

**GROUNDS  
FOR YOUR  
GARDEN**

# Community Participant Questionnaire

Reduce  
Reuse  
Recycle



1. What is your name?

CARMEN RIVERA

2. What is the name of the company or store that you work for?

Board of Education NYC / Brando's Cafe

3. How long have you been employed by this company or store?

22 years

4. What are your duties and working hours like?

IN charge of entire cafe  
- order food/supplies - student statistics  
- track money

5. What is your ethnic background and/or country of origin?

Puerto Rico

6. Where do you live in the city or surrounding area?

City Island

7. Do you have any interest or background in gardening?

I love that  
- big garden at my house

8. Have you heard of the *Team Up to Clean Up* program?

No

9. Have you heard that coffee grounds can help improve soil quality? Do you think there is some truth to this idea?

Yes I knew - in Puerto Rico  
we use that

10. What are some things that you would like to learn about gardening, recycling, and other means to beautify the city?

I like gardening, sports, dancing  
(softball team, garden etob)



# Community Participant Questionnaire

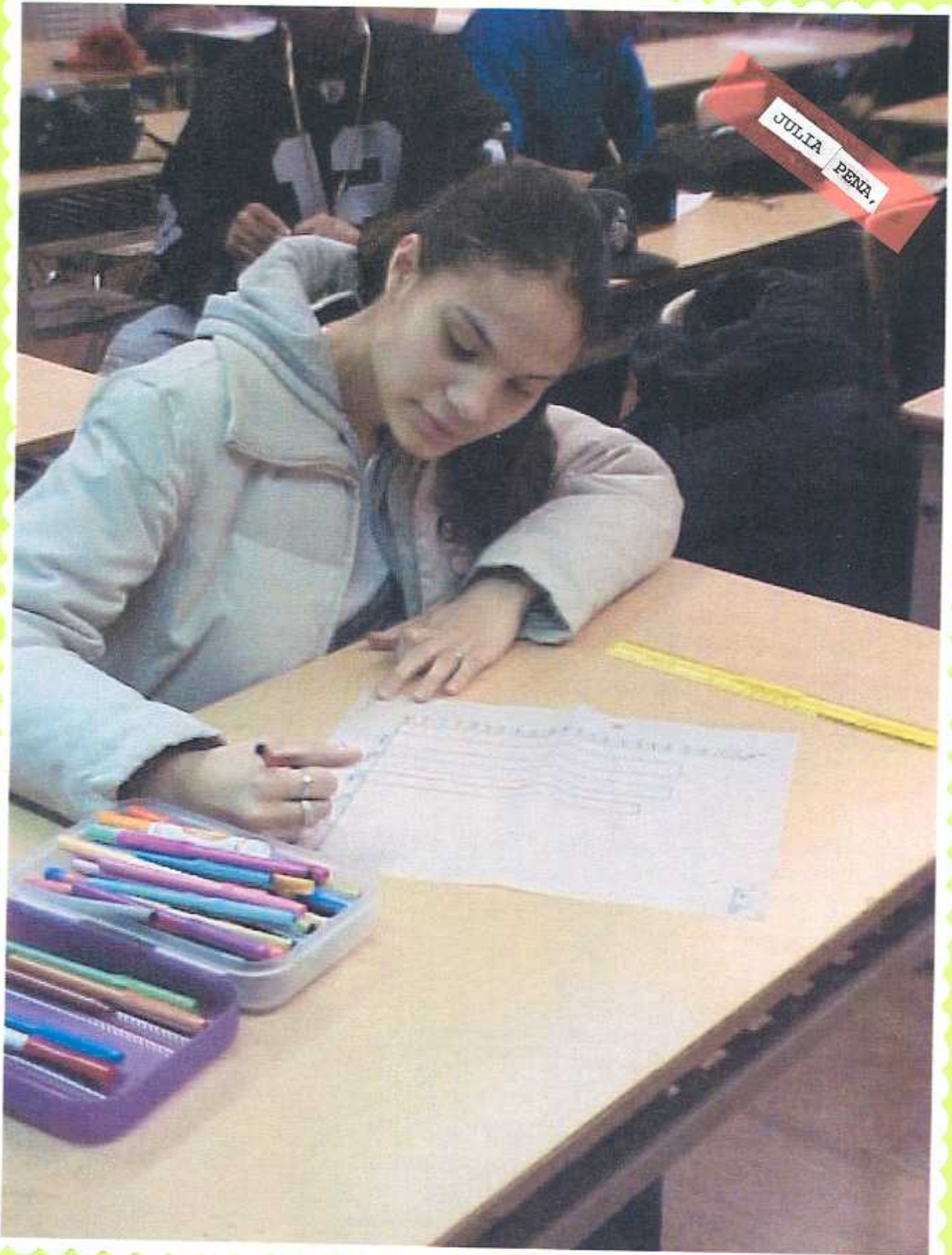
1. What is your name? *Jeanel ORIS - Beguerra*
2. What is the name of the company or store that you work for? *Starbucks*
3. How long have you been employed by this company or store? *2 years*
4. What are your duties and working hours like?
5. What is your ethnic background and/or country of origin?
6. Where do you live in the city or surrounding area? *East Side*
7. Do you have any interest or background in gardening? *Yes*
8. Have you heard of the *Team Up to Clean Up* program? *Yes*
9. Have you heard that coffee grounds can help improve soil quality? Do you think there is some truth to this idea? *Yes*
10. What are some things that you would like to learn about gardening, recycling, and other means to beautify the city?

**LOUIS D. BRANDEIS  
HIGH SCHOOL**

**CAFÉ STAFF**

**&**

**Period 2 Coffee Collectors**





**HORTICULTURE  
STUDENT  
INVOLVEMENT**

**WITH  
PARENTS & FACULTY  
ON**

**“HOW TO USE COFFEE AS A  
COMPOST AT HOME”**

**OPEN SCHOOL NIGHT  
MARCH 25<sup>TH</sup>, 2004**





## HOW TO OBTAIN RED COMPOSTING WORMS

Carolina  
2700 York Road  
Burlington, North Carolina 27215  
Phone 336-584-0381  
Fax 336-584-3999

Council on the Environment of NYC  
51 Chambers Street  
Room 228  
New York, N.Y. 10007  
Phone 212-788-7900  
Fax 212-788-7913  
Email [conyc@cenyc.org](mailto:conyc@cenyc.org)

Worm Box, Bedding,  
Food & RED WORMS



RED WORMS are available to buy at the FARMERS GREEN MARKET/E.14ST & UNION SQUARE  
Wed./Fri./Sat.  
Greenmarket Booth

YOU CAN ALSO BUY A LARGE RUBBERMAID BOX AND PUNCH HOLES FOR AIR TO ENTER THROUGH THE TOP.

KITCHEN FOOD SCRAPS CAN BE GIVEN TO THE WORMS. JUST REMEMBER "NO FLESH PRODUCTS" !

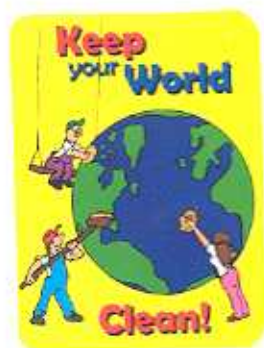
# Nasha & Sasha Answering Questions





**HORTICULTURE  
STUDENTS**

**RESPONSES  
TO  
THEIR PROJECT**





## Grounds For Improvement!

Have you ever had a project to do and when you sat down and thought about it you really didn't want to do it? But then there was something that made the project be prominent and you said to yourself "you really want to do it"? Well, that happened to me.

In my horticulture class, Ms. Mulholland told us that we were going to be doing a project about composting coffee indoors. At first I didn't want to do it because I thought it was going to be boring. I mean who really want to learn about composting coffee grounds to see if it <sup>would</sup> help our plants grow. But then I thought to myself and remembered what plants and trees do for us. They help to keep the air clean by removing poisonous gases, like carbon dioxide. They also give us food in the form of fruit and nuts. They provide habitat for all kinds of animals from insects to birds to small mammals. Then I thought to myself "hey why not do it and give back."

But before we could start our project, we had to do some research on composting coffee grounds. Then we sent a couple of e-mails to some people at Cornell University stating that we need some help and information about composting coffee grounds. They were very nice and send us some very helpful information.

The next day we went outside and took soil samples from six different tree pits. Then we went to the cafeteria and got coffee grounds samples. We then mixed the coffee grounds with the soil to see if it would lower or raise the pH level.

As a result of this, a lot of good things resulted from this. Starbucks has adopted our horticulture program. People in our school and community have helped and supported us all the way. I am so proud of myself that I took the time and did the things I was supposed to do to help Ms. Mulholland and Mr. Frampton succeed in this breathtaking project!

Leslyn Caleb

Beautifully written  
I am very proud of you!

My experience in the Team Up to Clean Up experiment on Grounds for Improvement has been excellent. In this experiment my group and I collected coffee grounds <sup>ed</sup> mix with our school's soil to see if the soil would improve. In this experiment, I was able to develop social skills and skills in science. Our experiment, <sup>ed</sup> Grounds for Improvement, has been a great experience for me.

There were many steps my group and I had to follow in order to successfully do our experiment. First my group and I collected some soil around our school's community. We then went from store to store collection coffee grounds. By doing this I was able to learn how to professionally present myself to other people to get things I need. After we collected the coffee grounds my group and I tested the soil with the soil testing kit. After testing the soil we mixed the coffee grounds with the soil. A couple of days later we retested the soil and we got the same results as our previous testing. After following these steps my group and I concluded that coffee grounds may have an effect on soil, but it might take more time to improve the soil.

This experiment has been a great experience for me. Although coffee grounds had no effect on the soil, I did learn how to properly communicate with other individuals and I also learned how to go about doing a science experiment. My experience doing this project has been great.

Shanell Werts  
Mrs. Mulholland p.d 2  
3/31/04

*I am glad  
you enjoyed  
learning something  
new in science*



Jean Darius

Ms. Mulholland / Mr. Frampton

4/1/04  
Hort. pd. 2

My experience on the "Grounds for Improvement" project was a very educating and a fun miniclude through nature. Mr. Frampton and I used coffee grounds from the Cafeteria, Janket's, Lenny's, Starbuck's, and West 85<sup>th</sup> Deli to cover certain pits of soils outside. The purpose for using these coffee grounds on the soil, was to lower the pH level on the soil. Before we put the coffee grounds on the soil, we tested it for its pH level. Most of the results were about 6.5 which is a little acidic. I personally feel like I <sup>was</sup> contributing to nature and my environment.

Yes you are!

Sabrina Quiles  
Period 2



March 30 2004  
Ms. Muholland

During the time period I have been working on this project, I have experience and learned many things. I learned how important it is for us to know our soil, to know how much nutrients it has and what type of fertilizer to use to better the soil for our plants. I learned why coffee beans are important to our environment; it helps put nutrients back in our soil. I experience how to test soil for its nutrients, we have to test its Ph. By doing this we know how much nutrients it has. I mixed coffee beans with the soil to improve its nutrients. My experience was an interesting one I have no complaints.

During this experience I gain a new interest in learning about our environment, how it works and how we can improve it. By us doing little things as checking the soil daily, making sure our plants have enough water, sun and nutrients we can make a big different in our environment. Part of this project was to get coffee grounds from different places. For example we went to Star Bucks, Lenny's, Janet's deli grocery and finally we picked up coffee grounds from our school cafeteria.

I enjoyed this project very much. Everything that I learned in this project will help me in my future. I will make sure my surroundings are better. I learned how to appreciate nature and what it does to make our environment better for us to live in. I am grateful for my teacher Ms. Mulholland for introducing me to a new interest. I would have never thought that I would have a slight interest in trees or nature in general. I took a great benefit from this project, its something that I would carry and remember for the rest of my life.

**FACULTY & STAFF**

**RESPONSES**  
**TO**

**GROUNDS FOR**  
**IMPROVEMENT**

**PROJECT**

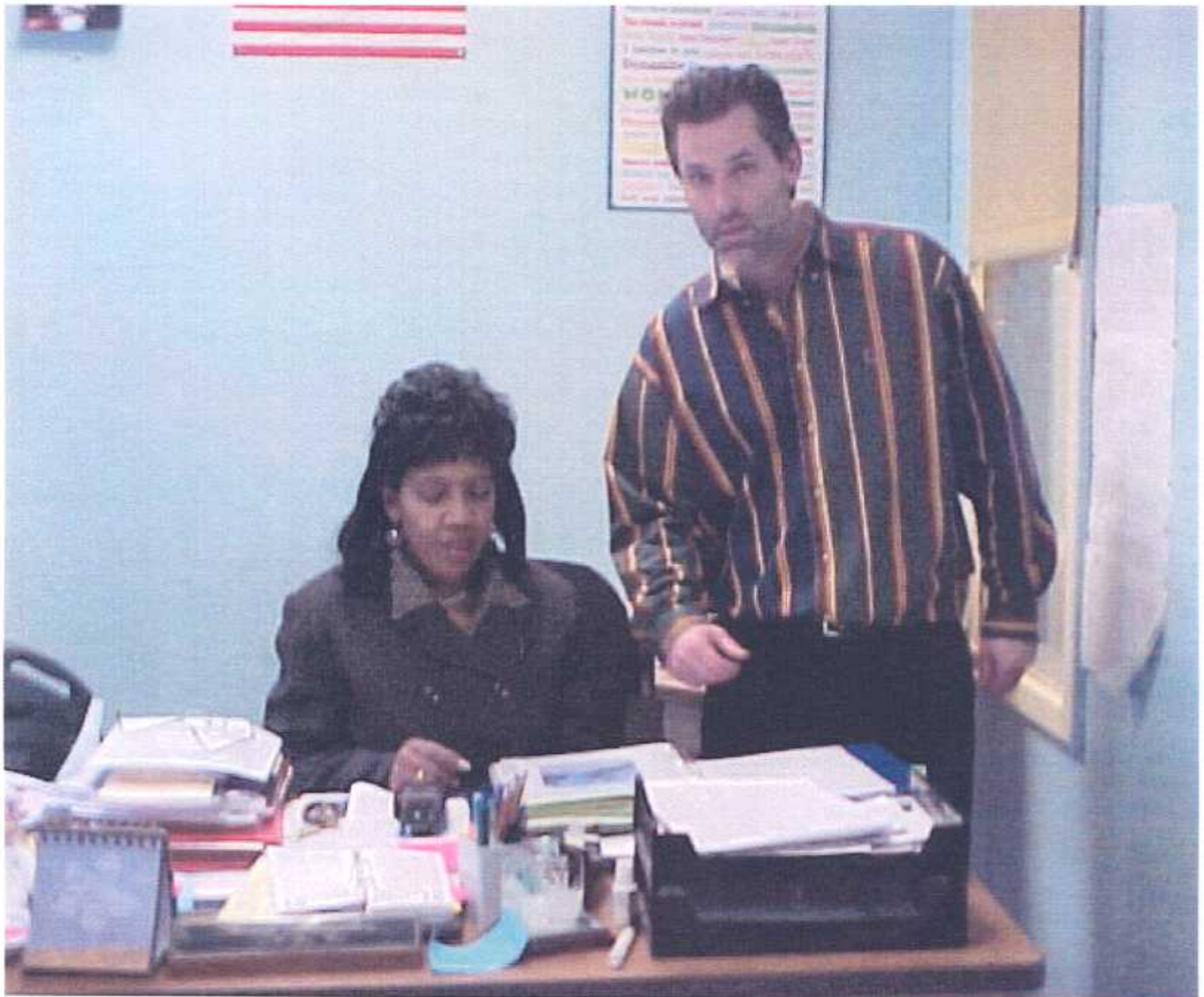


**You  
did it!**

**Dr. Messineo explains our project to  
Ms. Lisa Morris, Principal for a Day**



**Ms. Hamilton, Assistant Principal Special Ed. & Mr. Frampton evaluating our Team Up Project**





**Louis D. Brandeis High School**  
**145 West 84<sup>th</sup> Street, New York, N.Y. 10024**

**Dr. Eloise Messineo, Principal**

1-917-441-5600

1-212-877-1959 Fax

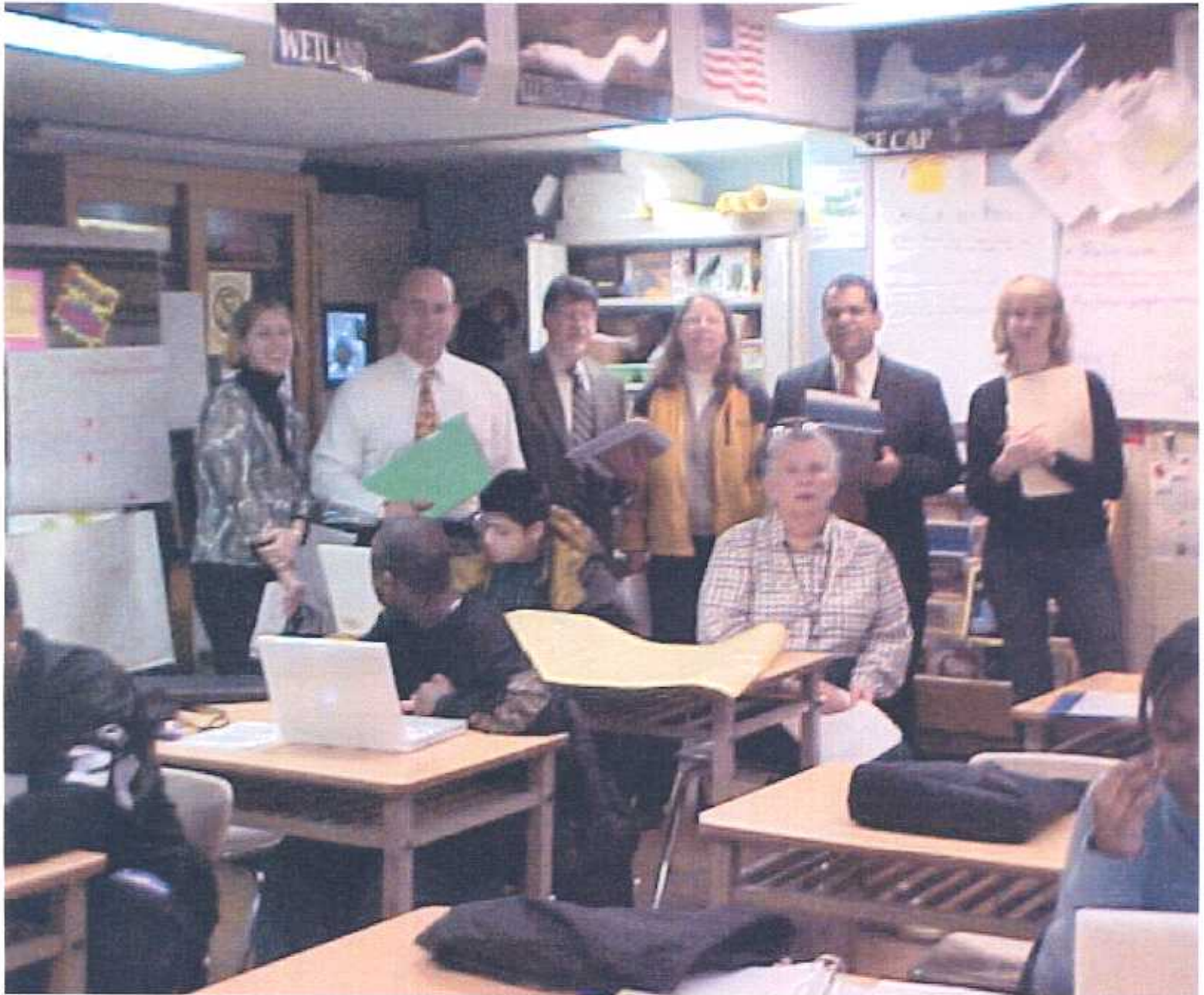


#### Grounds for Improvement

I observed Christine Mulholland's students many times while they were working on the Grounds For Improvement project. The entire project was an extremely interesting process to watch as a first year teacher. The students worked extremely hard throughout the entire project from idea, to research, to implementation. The most exciting thing about observing the students while they worked on Grounds for Improvement was seeing the level of interest that they had on the topic and the pride that they were able to complete what they viewed to be a difficult task. At every point throughout the process, the students were fully engaged and interested in what they were doing. They truly seemed to enjoy themselves while also diligently working on the project. I think that the students working on Grounds for Improvement will always remember and treasure the experience of completing this project, and that they will forever be able to have pride in the amount of and level of work that they did to see the project through from idea to completion.

*Vanesa Spajic*  
Science Dept.

**Mr. Arocho, Assistant Principal Science,  
Mr. Raab, Region 10 &  
Our Science Dept. Teachers**



**Walk through and Science department evaluation  
of our Team Up Project**

**Louis D. Brandeis High School**  
**145 West 84<sup>th</sup> Street, New York, NY 10024**  
**Dr. Eloise Messineo, Principal**  
**1-917-441-5600**



To: Christine Muholland  
Ref: Walk through  
Date: Friday, April 02, 2004

Thank you for being a participant of the walkthrough visit the Science Department conducted with Mr. Carl Raab, Science Supervisory Consultant – Region 10.

Your students were engaged in a project where their enthusiasm and interest was easily visible. Your students were utilizing technology to analyze data from soil tests that were conducted on tree pits, the school garden and the inner court yard soil samples. Students were gaining mastery in Microsoft Excel, PowerPoint and Word applications in their preparations for the culmination of their project. Your class room was an abundantly print rich environment with tons of samples of student work from their recent findings.

The five teachers and representative from the Regional Superintendents Office participated in the walkthrough had nothing but praise to offer at your class room and the teaching and learning environment which you have fostered and developed.

Thank you once again for your passion and commitment to Louis D. Brandeis High School.

Sincerely,

Antonio E. Arocho  
Assistant Principal of Science Education



## LOUIS D. BRANDEIS H.S.

145 West 84<sup>th</sup> Street – New York, NY 10024

Phone (917) 441-5600 Fax (212) 877-1959

Dr. Eloise Messineo, Principal

To: New York City Department of Sanitation

Re: "Team Up to Clean Up"

Date: April 14, 2004

As the instructional leader for mathematics education at Louis D. Brandeis High School, I am extremely pleased with the students in **Ms. Christine Mulholland's** *Horticulture Inclusion* class.

Through their "**Grounds for Improvement**" Project, the students have successfully integrated the math standards throughout their project. Among them are:

- **Conceptual Understanding** - comprehension of mathematical concepts, operations, and relations.
- **Procedural Fluency** - skill in carrying out procedures flexibly, accurately, efficiently, and appropriately.
- **Strategic Competence** - ability to formulate, represent and solve mathematical problems.
- **Adaptive Reasoning** - capacity for logical thought, reflection, explanation, and justification.
- **Productive Disposition** - habitual inclination to see mathematics as sensible, useful and worthwhile, coupled with a belief in diligence and one's own efficacy.

In addition, the students become actively involved with technology.

Technology is broader than the use of hardware. It includes any innovative strategy that will provide students more time with high quality curriculum and with opportunities to learn.

In summary, my kudos to Ms. Mulholland and her students for finding creative ways to integrate math and technology in their exciting science project.

A handwritten signature in black ink that reads "Gene Manchand".

Dr. Gene Manchand  
Assistant Principal – Mathematics

*A Open Letter to Our Students  
From  
Mr. Frampton & Ms. Mulholland*

*When you enter any type of competition you are always hopeful that you may win, but in this case we have already won.*

*Mr. Frampton and I are so proud of your efforts not only in the pursuit of academic excellence but also for the bonds and team effort which you have exhibited over this term in preparing for this year's Team Up to Clean Up entry.*

*It is very exciting watching young people becoming enthusiastic about the possibilities of how an academic project will culminate. Mr. Frampton and I are so grateful that you let us lead you through this process to a successful end.*

*THIS IS YOUR PROJECT*

*BE VERY PROUD OF YOUR WORK!*

*Because*

*The Faculty of Louis D. Brandeis High School*

*Is*

**MEETING THE**  
**STANDARDS FOR**

**THE**  
**GROUNDS**  
**FOR**  
**IMPROVEMENT**

**PROJECT**



# GROUNDS FOR IMPROVEMENT TECHNOLOGICAL COMPONENT

## HARDWARE

Students utilized the following hardware tools:

16 iBook G3 Macintosh laptop computers that were wirelessly connected to a T3 internet server.

Hewlett Packard wireless laserjet printer

Polaroid PhotoMax PDC 2050 Digital Camera

Sony MiniDisc Digital Camera

Cannon SureShot Film Camera

## PROGRAMS AND APPLICATIONS

Students made use of the following programs and applications:

Microsoft Word

Microsoft PowerPoint

Google internet search engine

Yahoo email accounts

iphoto digital photography program

# Learning Standards for New York State

## Health, Physical Education, and Home Economics

### Standard 1: Personal Health and Fitness

Students will have the necessary knowledge and skills to establish and maintain physical fitness, participate in physical activity, and maintain personal health.

### Standard 2: A Safe and Healthy Environment

Students will acquire the knowledge and ability necessary to create and maintain a safe and healthy environment.

### Standard 3: Resource Management

Students will understand and be able to manage their personal and community resources.

## Mathematics, Science, and Technology

### Standard 1: Analysis, Inquiry, and Design

Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.

### Standard 2: Information Systems

Students will access, generate, process, and transfer information using appropriate technologies.

### Standard 3: Mathematics

Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.

### Standard 4: Science

Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.

### Standard 5: Technology

Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs.

### Standard 6: Interconnectedness: Common Themes

Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.

### Standard 7: Interdisciplinary Problem Solving

Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.

## English Language Arts

### Standard 1: Language for Information and Understanding

Students will listen, speak, read, and write for information and understanding. As listeners and readers, students will collect data, facts, and ideas; discover relationships, concepts, and generalizations; and use knowledge generated from oral, written, and electronically produced texts. As speakers and writers, they will use oral and written language that follows the accepted conventions of the English language to acquire, interpret, apply, and transmit information.

### Standard 2: Language for Literary Response and Expression

Students will read and listen to oral, written, and electronically produced texts and performances from American and world literature; relate texts and performances to their own lives; and develop an understanding of the diverse social, historical, and cultural dimensions the texts and performances represent. As speakers and writers, students will use oral and written language that follows the accepted conventions of the English language for self-expression and artistic creation.

### Standard 3: Language for Critical Analysis and Evaluation

Students will listen, speak, read, and write for critical analysis and evaluation. As listeners and readers, students will analyze experiences, ideas, information, and issues presented by others using a variety of established criteria. As speakers and writers, they will use oral and written language that follows the accepted conventions of the English language to present, from a variety of perspectives, their opinions and judgments on experiences, ideas, information and issues.

### Standard 4: Language for Social Interaction

Students will listen, speak, read, and write for social interaction. Students will use oral and written language that follows the accepted conventions of the English language for effective social communication with a wide variety of people. As readers and listeners, they will use the social communications of others to enrich their understanding of people and their views.

## Languages Other Than English

### Standard 1: Communication Skills

Students will be able to use a language other than English for communication.

### Standard 2: Cultural Understanding

Students will develop cross-cultural skills and understandings.



## The Arts

### Standard 1: Creating, Performing, and Participating in the Arts

Students will actively engage in the processes that constitute creation and performance in the arts (dance, music, theatre, and visual arts) and participate in various roles in the arts.

### Standard 2: Knowing and Using Arts Materials and Resources

Students will be knowledgeable about and make use of the materials and resources available for participation in the arts in various roles.

### Standard 3: Responding to and Analyzing Works of Art

Students will respond critically to a variety of works in the arts, connecting the individual work to other works and to other aspects of human endeavor and thought.

### Standard 4: Understanding the Cultural Contributions of the Arts

Students will develop an understanding of the personal and cultural forces that shape artistic communication and how the arts in turn shape the diverse cultures of past and present society.

## Career Development and Occupational Studies

### Standard 1: Career Development

Students will be knowledgeable about the world of work, explore career options, and relate personal skills, aptitudes, and abilities to future career decisions.

### Standard 2: Integrated Learning

Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings.

### Standard 3a: Universal Foundation Skills

Students will demonstrate mastery of the foundation skills and competencies essential for success in the workplace.

### Standard 3b: Career Majors

Students who choose a career major will acquire the career-specific technical knowledge/skills necessary to progress toward gainful employment, career advancement, and success in postsecondary programs.

## Social Studies

### Standard 1: History of the United States and New York

Students will use a variety of intellectual skills to demonstrate their understanding of major ideas, eras, themes, developments, and turning points in the history of the United States and New York.

### Standard 2: World History

Students will use a variety of intellectual skills to demonstrate their understanding of major ideas, eras, themes, developments, and turning points in world history and examine the broad sweep of history from a variety of perspectives.

### Standard 3: Geography

Students will use a variety of intellectual skills to demonstrate their understanding of the geography of the interdependent world in which we live—local, national, and global—including the distribution of people, places, and environments over the Earth's surface.

### Standard 4: Economics

Students will use a variety of intellectual skills to demonstrate their understanding of how the United States and other societies develop economic systems and associated institutions to allocate scarce resources, how major decision-making units function in the United States and other national economies, and how an economy solves the scarcity problem through market and nonmarket mechanisms.

### Standard 5: Civics, Citizenship, and Government

Students will use a variety of intellectual skills to demonstrate their understanding of the necessity for establishing governments; the governmental system of the United States and other nations; the United States Constitution; the basic civic values of American constitutional democracy; and the roles, rights, and responsibilities of citizenship, including avenues of participation.

Note:

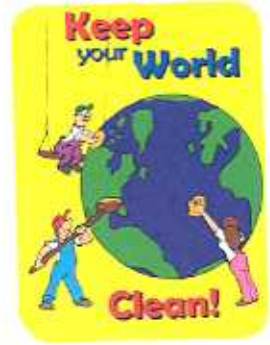


*Indicates standards met by students who worked on this project... "Team Up to Clean Up"*

How does your Garden Grow?



Mr. Tony Cooper



Our Custodian



**Ms. Mulholland receiving a call from  
Mary Most of the Dept. of Sanitation telling her  
that the project was dropped off at 44 Beaver  
Street on April 16<sup>th</sup>, 2004 on time.**

