COMMUNITY SCHOOLS AND ENVIRONMENTAL SUSTAINABILITY

Regina Bynum - UACS Director of Teaching and Learning
Joseph Brand - UACS High School Manager
Anna Balfanz - Penn Sustainability Coordinator



Goals of Collaborative Environmental Design Interventions



Food sovereignty over fresh, local, organic produce

Urban heat island mitigation

Reduced combined sewer overflow discharge and improved water quality

Habitat restoration



Beautiful and safe outdoor community and school gathering spaces

Youth empowerment and youth as agents of change

Sense of school pride and belonging in students



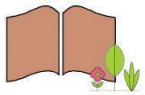
Increased mental well-being

Environmental and health justice, climate resilience

Environmental stewardship

Mobilization around school facilities for community resilience, health prosperity, environmental justice, and educational equity.

Exploration of the roles of university partnerships.



Hands-on, local, real world education opportunities in all subjects

Spaces to integrate and aggregate university-community-school partnerships and K-20+ collaborative learning

College and career exploration

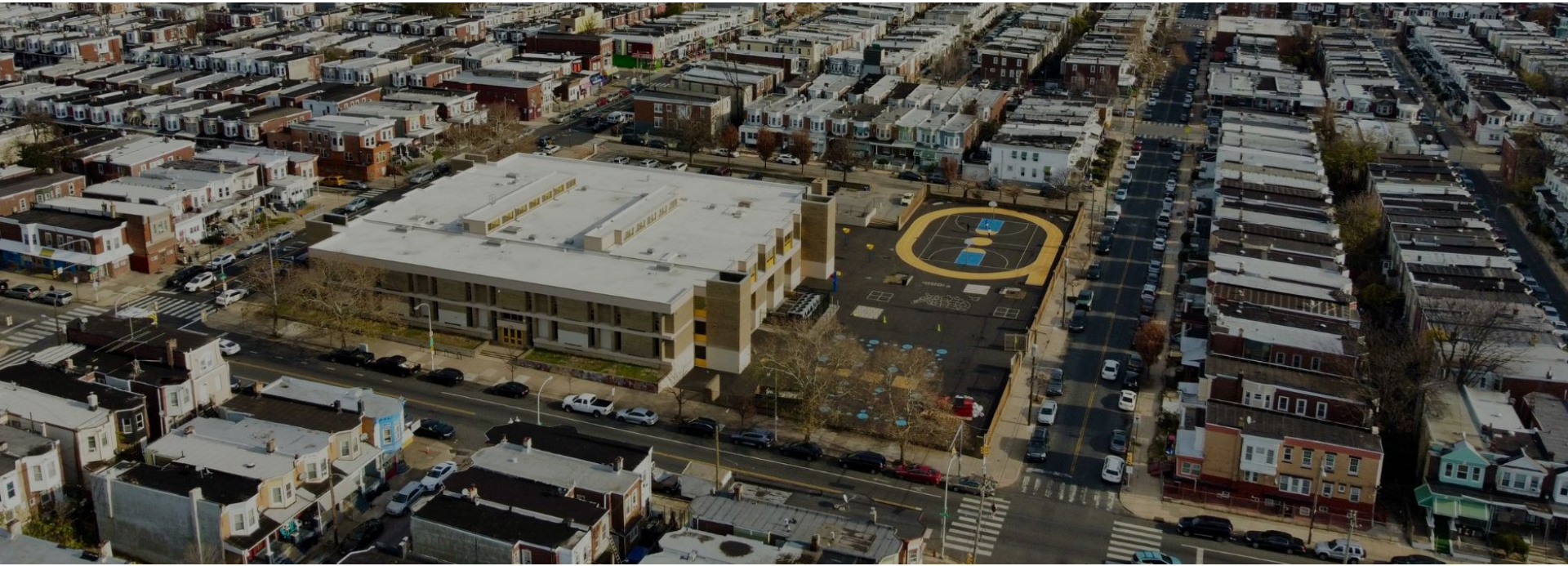
ANDREW HAMILTON SCHOOL



HAMILTON UACS SCHOOL GARDEN



Andrew Hamilton School



Let's design together!

Collaborative design at Hamilton (virtual learning)

Before

What Words describe it now?

Gross, empty, stray cats, hard to say how healthy it is, dog feces, a mess, trash all over the place, Dog poop that people step in during fire drills, big holes, big puddles,

What pictures describe it now?

After

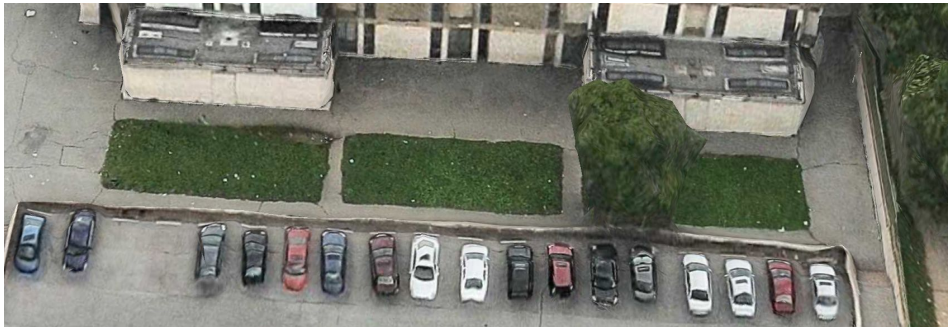
What Words describe what we want??

Neat, plants, tulips, venus fly traps, gate for animal control, sitting area, dog sign saying "if you leave the poop, you have to pay," community working on it together, watermelon plants, mint, potatoes plants, grapes, grape vineyard, blueberries, trees with leaves, trees that grow flowers, ways to get into the flowers.

What Pictures Describe what we want?

BEFORE

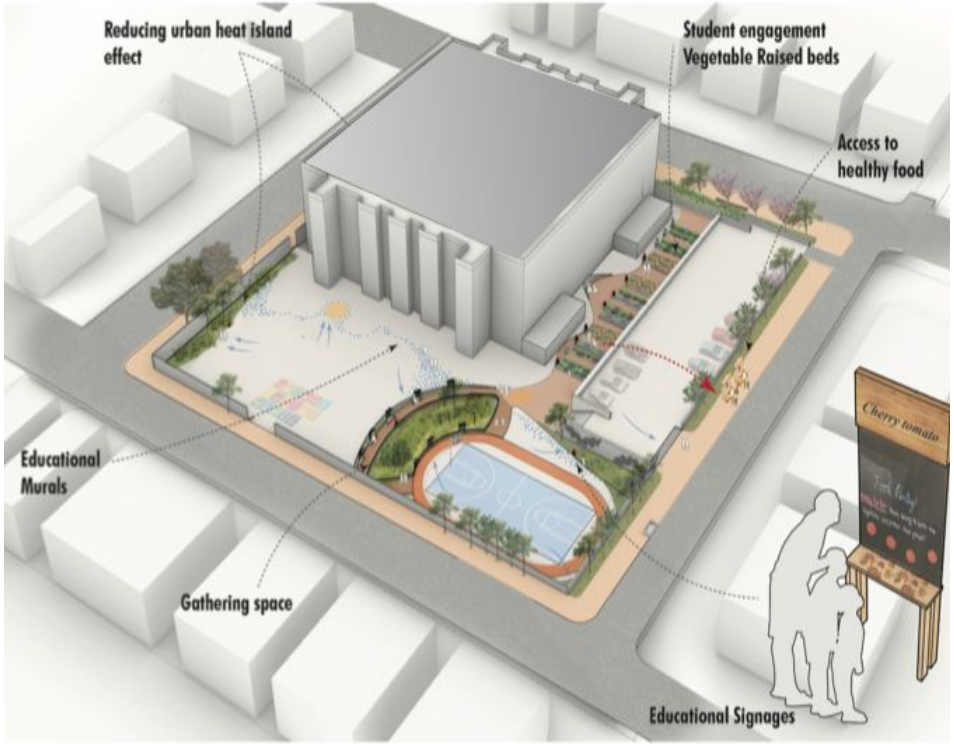






Case study: The UACS Andrew Hamilton School Garden Collaboration

- Created outside learning labs, school gardens and edible forest
- Students learning by doing–engaged in real-world problem solving
- Many university and community partners












Welcome to
Hamilton







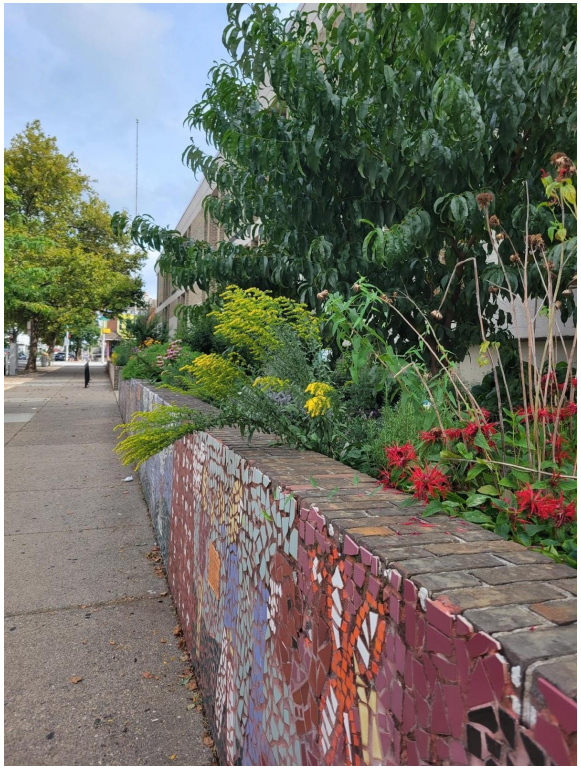
AFTER

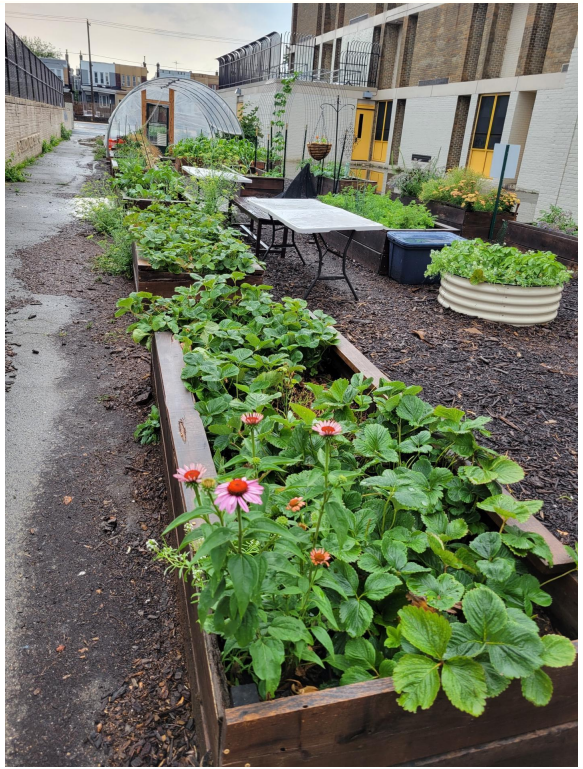




AFTER







AFTER







Food Forest Design - Philadelphia Orchard Project



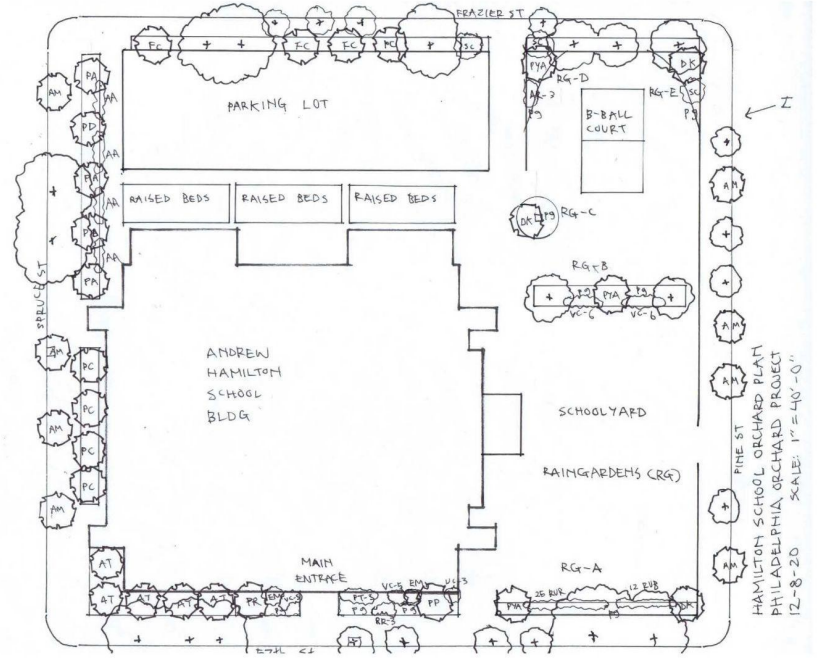
Canopy



Shrubs & Vines



Groundcovers



Philadelphia Orchard Project



Educational Signage



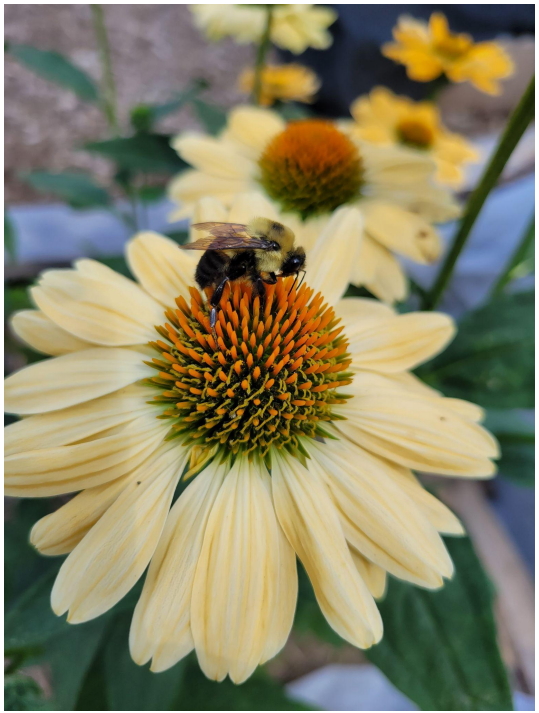




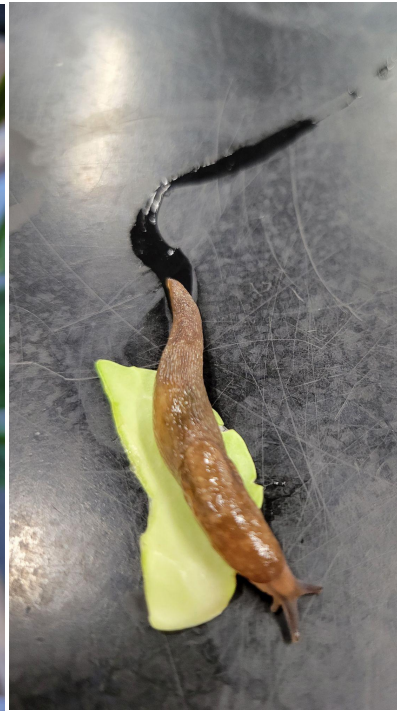
Healthy Ecological Habitat



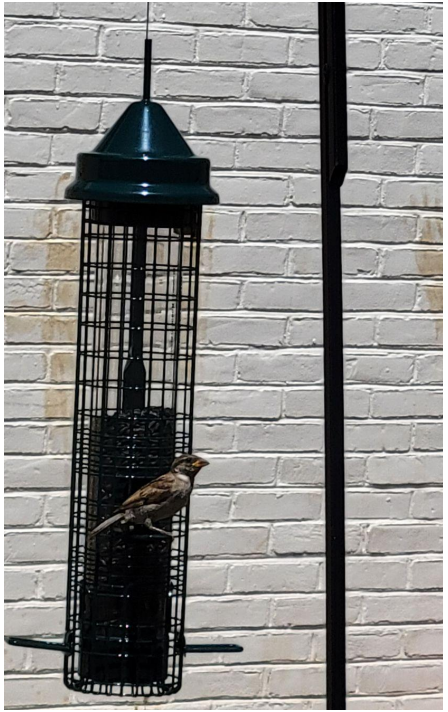
Monarch butterflies!



Pollinators!



Slugs!



Birds!

Food Forest - Philadelphia Orchard Project







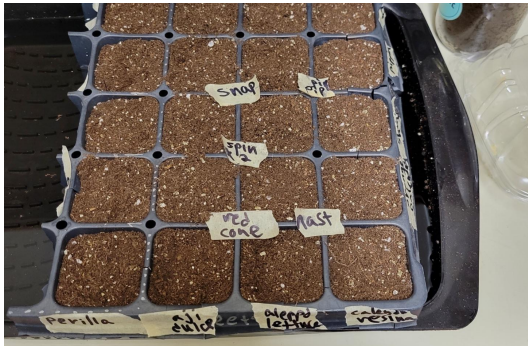


Hamilton Garden Club





All Stages of Plant Growth



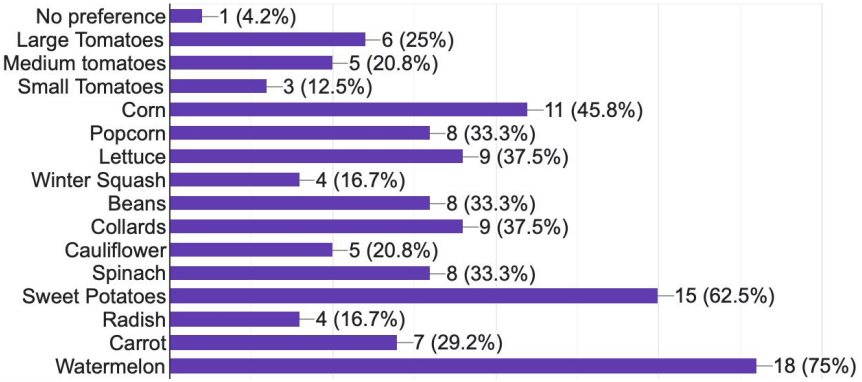




(General) Which fruits/vegetables would you like in the garden?

Copy

24 responses



Harvesting











Harvest Processing and Distribution













Food Preservation



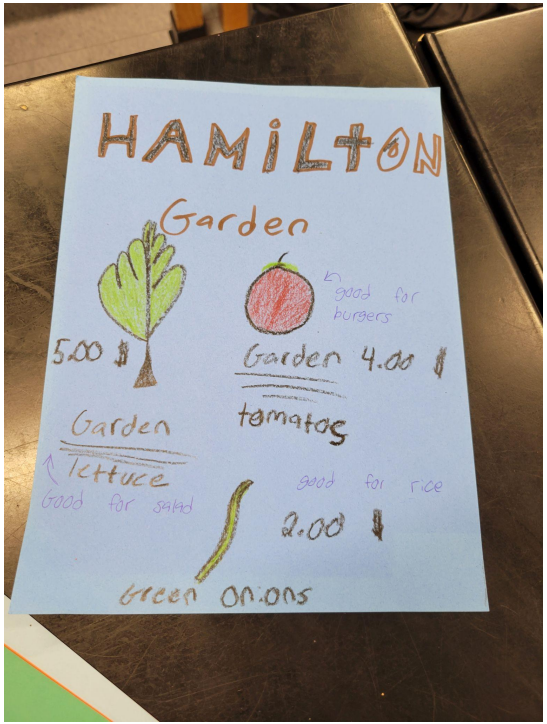


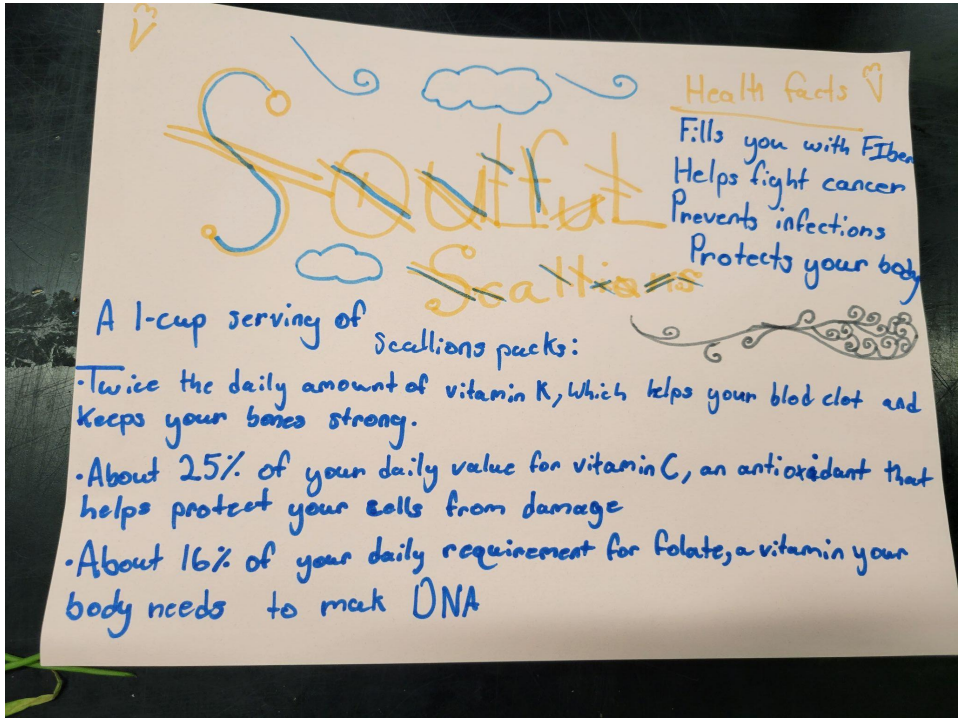






Healthy Eating | Recipes | How to Use Everything in the Garden









Engagement with Fauna









Field Trips




FEBRUARY
SEEDS AND
2022 CALENDAR
FEEL FREE TO TAKE
TRUELOVE SEEDS
CALENDAR!
DONATION $ OPTIONAL
+ APPRECIATED ♡
VENMO: @OWEN-TAYLOR

Hamilton Garden Harvest Facts!

- Quantity
  - 500+ pounds annually
- Distribution Outlets
  - Students, parents, and staff
  - Neighbors
  - Family Farm Stand / Good Food Bag
  - School events (Back to School BBQ, Winter Showcase, etc.)



Family and Community Engagement





andrew_hamilton_elementary • Following
Hamilton AndrewSchool

andrew_hamilton_elementary Good afternoon, the Hamilton Garden biweekly community volunteer day will be happening again tomorrow, Friday May 13 at 3:30 PM. I hope to see many of you there. Here are some bonus pics from the last few months of afterschool garden club. Many perennial flowers are coming back to life and starting to bloom!

12w

whois_audrisrozelle So glad to see all the spring blooms in my absence. Can't wait to see what harvest comes in the summer 😊 The possibilities are endless when the community comes together to heal the food deserts and make our communities more sustainable and environment healthier to reduce the higher risk of asthma in Black and Brown neighborhoods. It all begins by planting a seed...

12w Reply

Liked by penn_young_quakers and 15 others

MAY 12

Add a comment...

Curriculum integration

The design, creation, utilization, and evaluation stages of these projects creates countless opportunities for K12 students to use numbers, patterns, data, experiments, language, history, democracy, movement, art, and more to act as agents of change and transform a component of their school, connect their education to their lived experiences, and simultaneously deepen academic understandings.



	Language Arts	Math	Science	Social Studies
Learning Objectives	How can we communicate our thoughts, needs, and visions for ourselves through different styles and mediums?	How do we use measurements, patterns, and data to understand and transform our world?	How do we apply observation, inquiry, experiment, and analysis to ask real questions and test real hypotheses with lasting impact?	How do communities interact with their natural environment? How do we mobilize communities?
Example Activities	-Create signage and garden tours -Document changes in the garden overtime in diverse mediums -Create recipe books and seed stories -read for inspiration	-Make decisions about the farmer's stand based on numerical data - Track and analyze growth rates of plants in relation to different environmental factors - Analyze environmental quality and weather data using mean, mode, comparisons, etc.	-Test hypotheses for growth - different mixed soil amounts, seeds/sqrf, different amounts of shade and water, etc. -Use observation to identify parts of the garden - i.e. tree species based on leaf structure -Use chemistry through cooking and preserving the produce	-Interview community members about their experiences with changes to the environment over time -Create community agreements for the garden -learn about different cultures from different crops, recipes, and growing methods

How much Water do our Plants Need?

Let's go back to our garden bed that we talked about last week! The **dimensions** of the garden are **8 feet by 4 feet**, and 1 foot deep. Our plants need **1 inch of water** per week. In November in Philly, it rains **3 inches of water per month.**

How much water do we need to give our plants **per week?**

First step: What do we know?

- Dimensions: 8 feet by 4 feet, 1 foot deep
- Rains 3 inches of water **per month** in philly
- Our plants need **1 inch of water per week**

How can we relate the water the plant needs, the water they get from rain, and the extra water we need to give them?

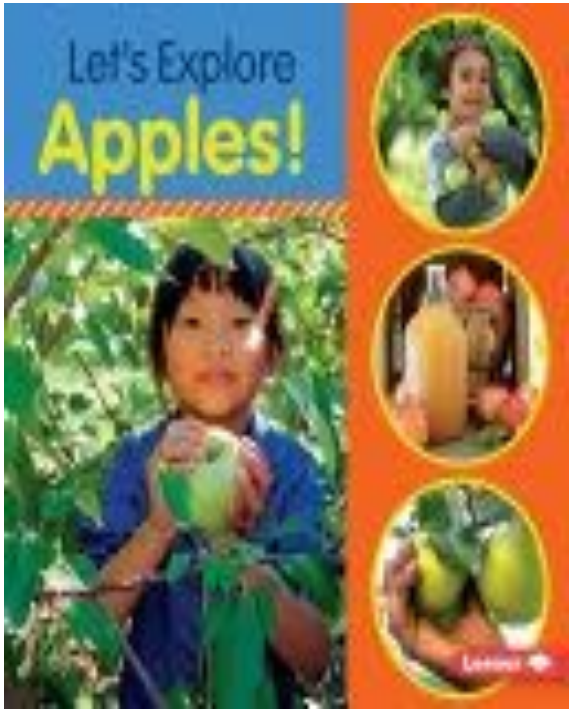
Water that plant needs = water from rain + extra
Extra = water needs - water from rain

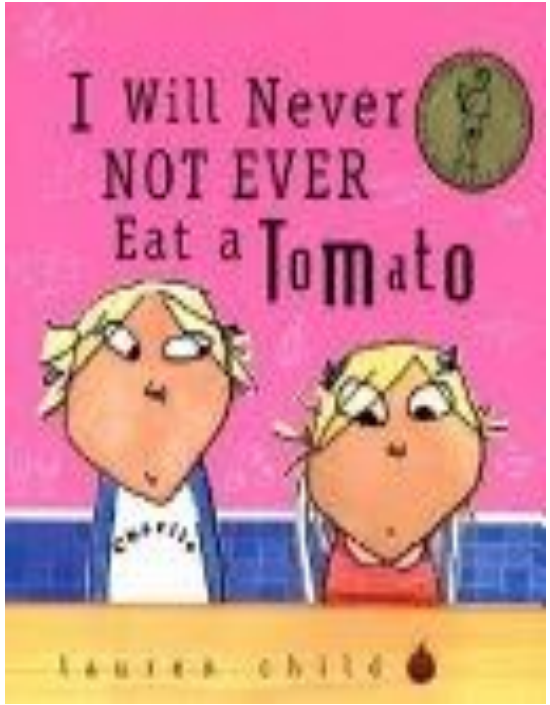
Scientific Connections to After-school Activities

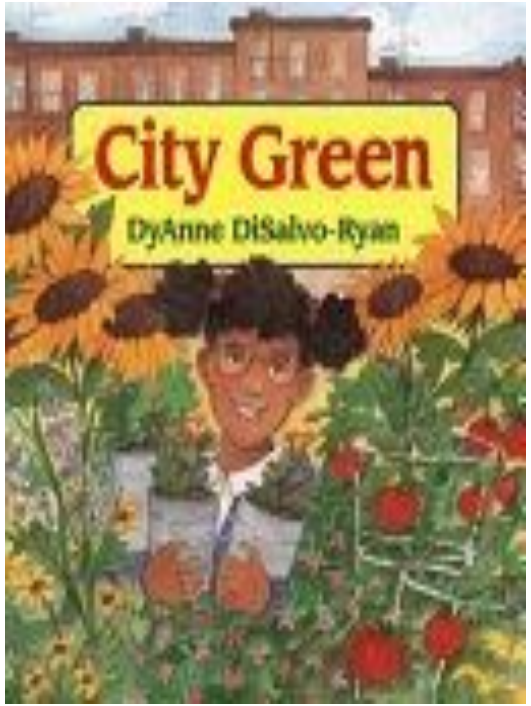
- **Scientific method skills**
  - Scavenger hunts for scientist observation
  - Observation for pest management and bug identification
  - Scientific illustrations
  - Tomato growing experiment
- Entomology (the study of insects)
- Plant families and plant identification
- Diverse growing techniques
  - Propagation, overwintering plants, tower garden, hydroponics, etc.
- Biology
  - Growing a plant, soil biology, compost and decomposition, earthworm anatomy
- Seasonal impacts
  - Cell walls freeze, how annual versus perennial plants work, different plant growing regions



Connections to English, Language Arts

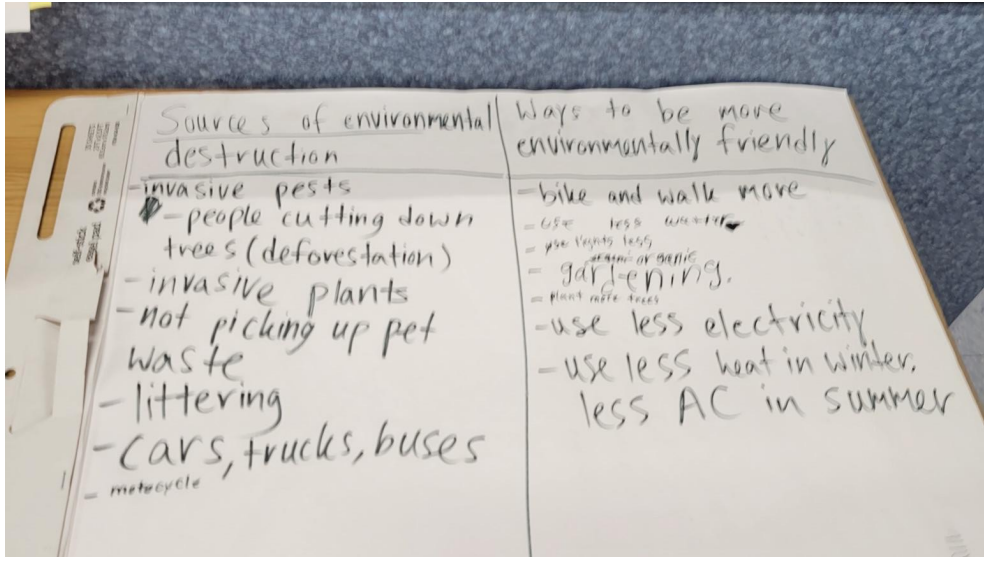






Social Studies Connections to After-school Activities

- Black history and famous Black farmers and agricultural scientists
    - Trip to Farmer Jawn-128 acre working farm
- Research projects on the history of plants that grow in the garden
- Sustainability
- Food access and social justice



Artistic Connections to After-school Activities

- Painting still lifes in the garden
- DIY birdfeeders
- Bouquets with dried flowers
- Upcoming mural painting opportunity



Classroom gardening

- The middle school science class (room 335) hosts indoor hydroponic tower garden, which functions year-round. A core group of students to maintain the tower garden by filling it with water and nutrients, and periodically checking the pH and plant health.
- Another middle school teacher (Mr. Sams in 333) hosts a grow tent, where students can view the growth of plants from seed that will later be planted in the outdoor raised beds.
- Several teachers host overwintered pepper plants and indoor houseplants.
- Another classroom is responsible for one of the raised garden beds



Middle and High School Student Paid Summer Internships

- Career Exposure Program (rising 6th - 8th graders):
  - ~10 kids in summer 2021, ~15 kids in summer 2022
- Paid High School Internships
  - Two paid interns from Paul Robeson High School supported the Hamilton Garden for 20 hour/week for six weeks in Summer 2022

"I learned many things but the most important thing I learned was to take control of stressful situations and handle them, and I did. When my boss was out sick I had to become the boss and get things in order and help things move along the way the were supposed to, and I did and everything worked out." Tanaiyah, Robeson High School student

"I learned different types of plants and what kind of insects are good for the garden and would help the plants and other insects that would either eat or damage the plants in our garden. And Mr. Harry helped me and Tanaiyah out a lot with identifying those things, and also in stressful situations I had to remain calm and keep a positive mindset in every situation, and from that I learned I can do that with anything I go through in life." Marquan, Robeson High School student



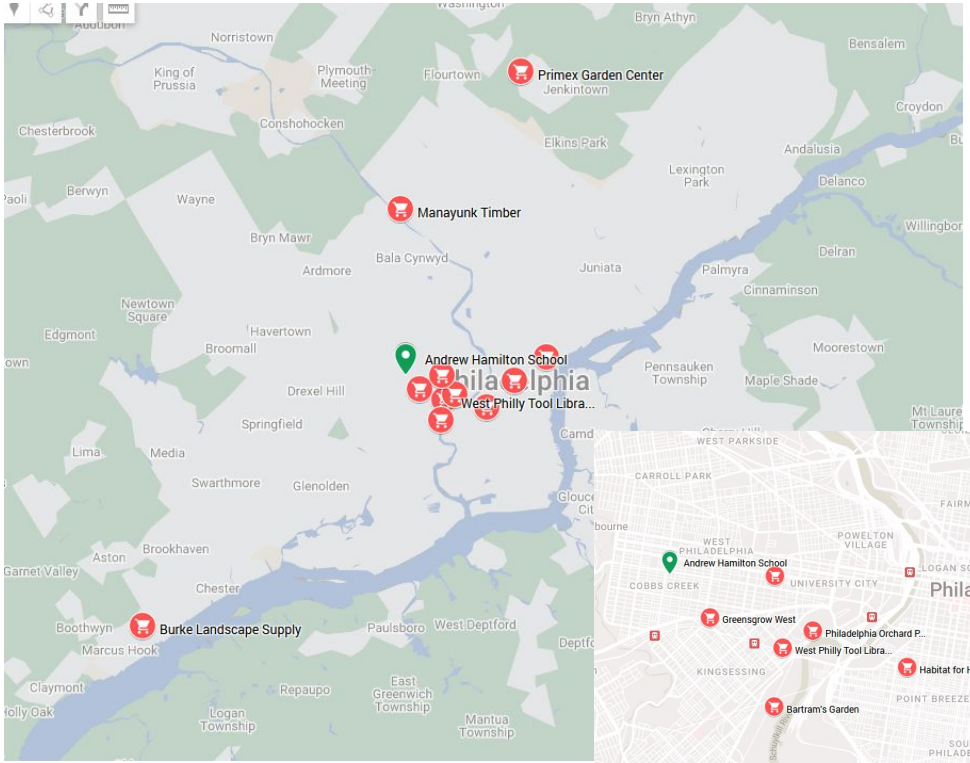
Family and Community Engagement



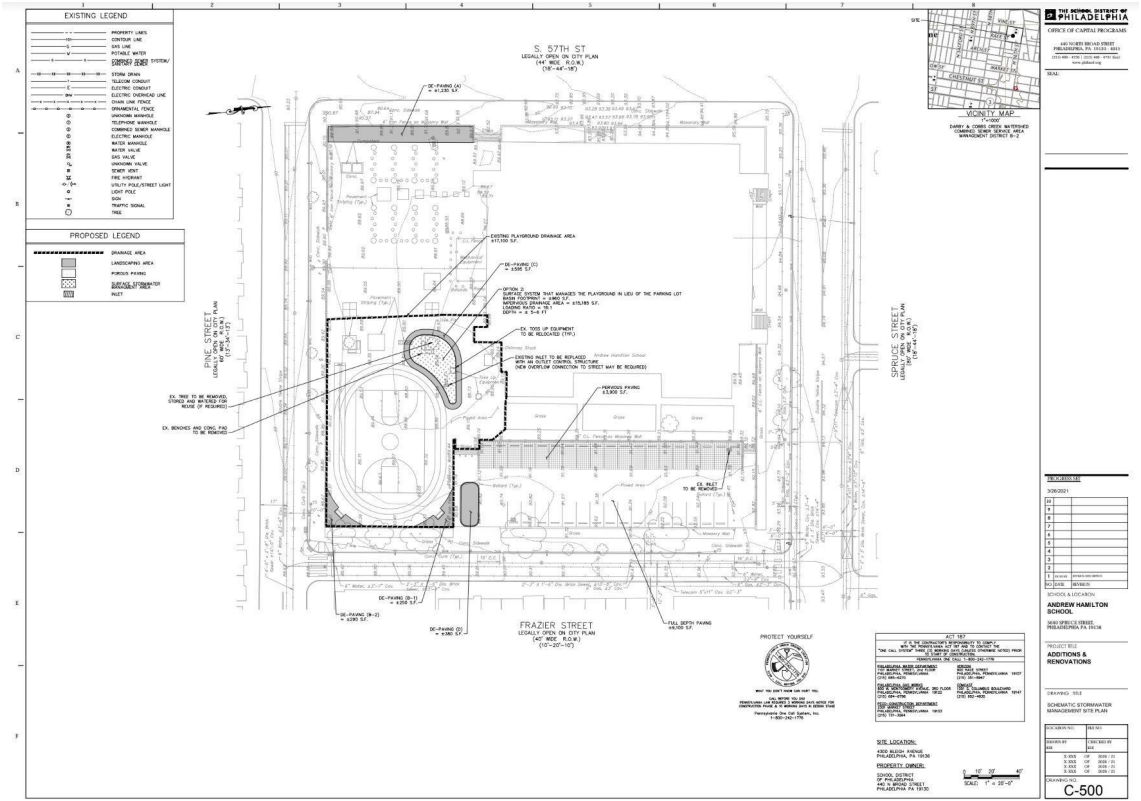


Local Businesses Used

- West Philly Tool Library
- Manayunk Timber
- Primex Garden Center
- Bartram’s Garden
- Philadelphia Orchard Project Inc
- Habitat For Humanity ReStore
- Truelove Seeds
- Greensgrow Farms
- Sean Burke Landscape Supply
- The Experimental Farm Network
- Monarch Hardware Company
- City Planter

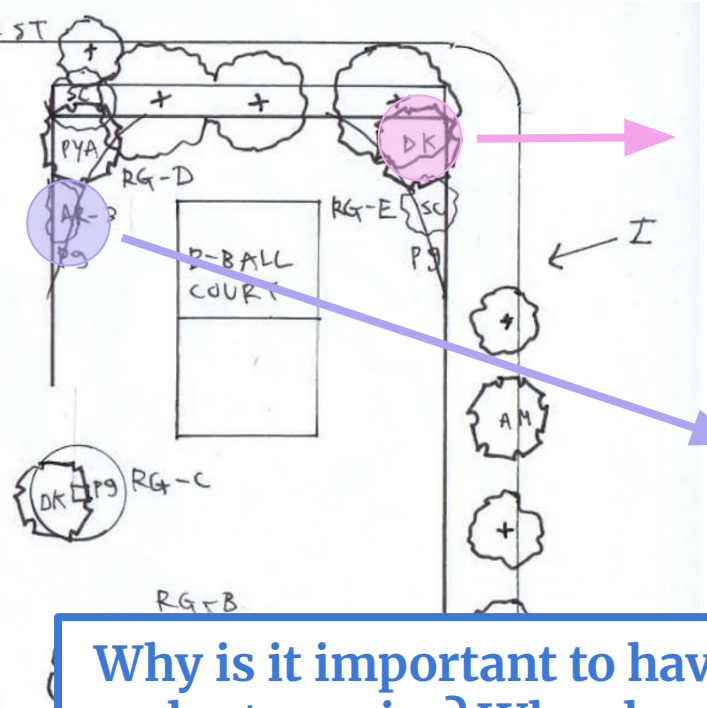


Rain Garden



The School District of Philadelphia swapped plans for a subsurface detention basin to rain gardens for their stormwater capture plan.









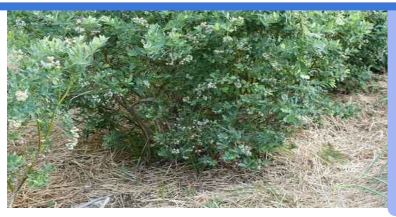
Asian Persimmon





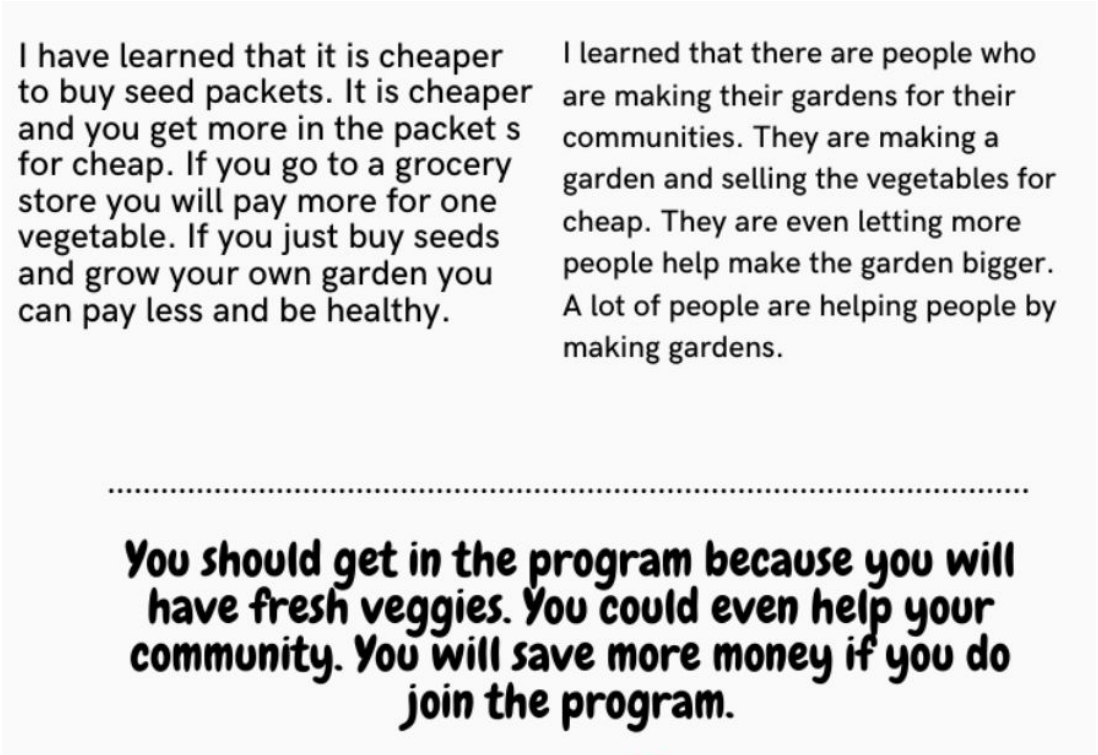
Black Chokeberry

Why is it important to have so many different plant species? Why shouldn't we just have cherry trees everywhere?





Blueberry



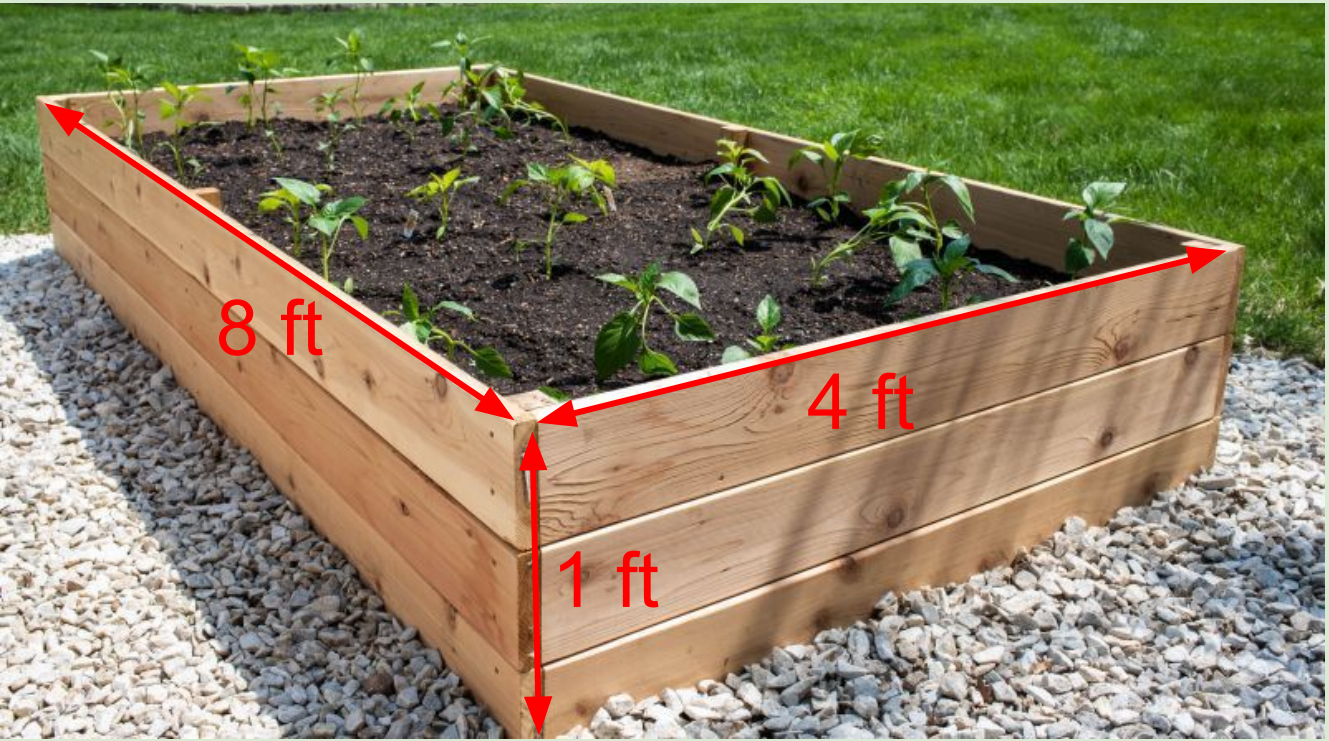
I have learned that it is cheaper to buy seed packets. It is cheaper and you get more in the packet s for cheap. If you go to a grocery store you will pay more for one vegetable. If you just buy seeds and grow your own garden you can pay less and be healthy.

I learned that there are people who are making their gardens for their communities. They are making a garden and selling the vegetables for cheap. They are even letting more people help make the garden bigger. A lot of people are helping people by making gardens.

You should get in the program because you will have fresh veggies. You could even help your community. You will save more money if you do join the program.

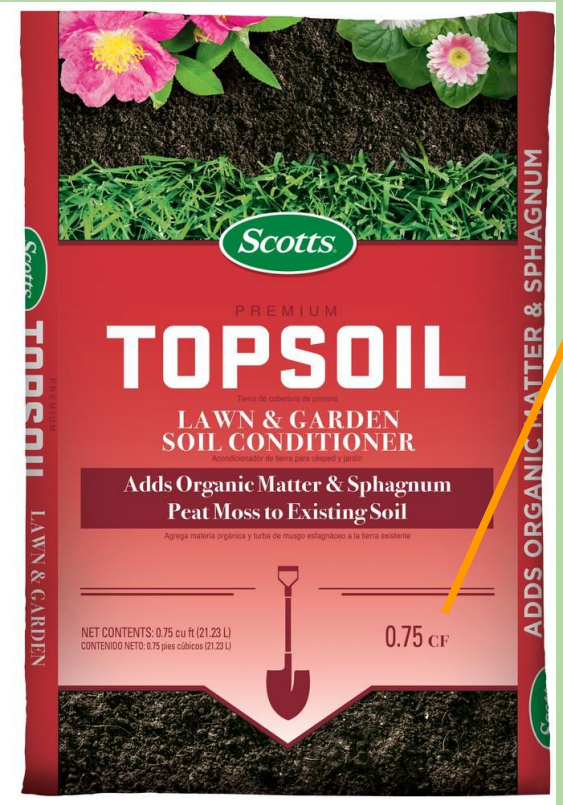
- 6th grader at Andrew Hamilton School for a school newsletter project

Activity: Garden bed calculations



- How much soil do you need?
- V = l*w*h
- V = 8*1*4 = **32 ft^3**

How many bags of soil?





1. 1 bag has 0.75 ft^3 of soil
2. Knowing this and our volume (36 ft^3), how can we find the number of bags of soil needed?
3. **V = 0.75 * bags**
4. bags = V/0.75 = 36/.75 = 42.67 bags
5. Bags = **43 bags** (we rounded **UP**)

Whats going on with those raised beds?

Group Members: Maya, Zya, Steph Grade: 10th

Studio+ needs your help to do field research on the raised beds in the courtyard in order to create more detailed designs for them.

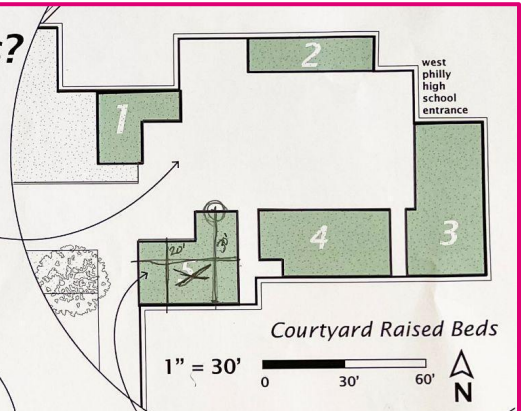
1. Fill out where you are working on this map.
2. Fill in all the measurements on the section.
3. Describe the materials of each part.

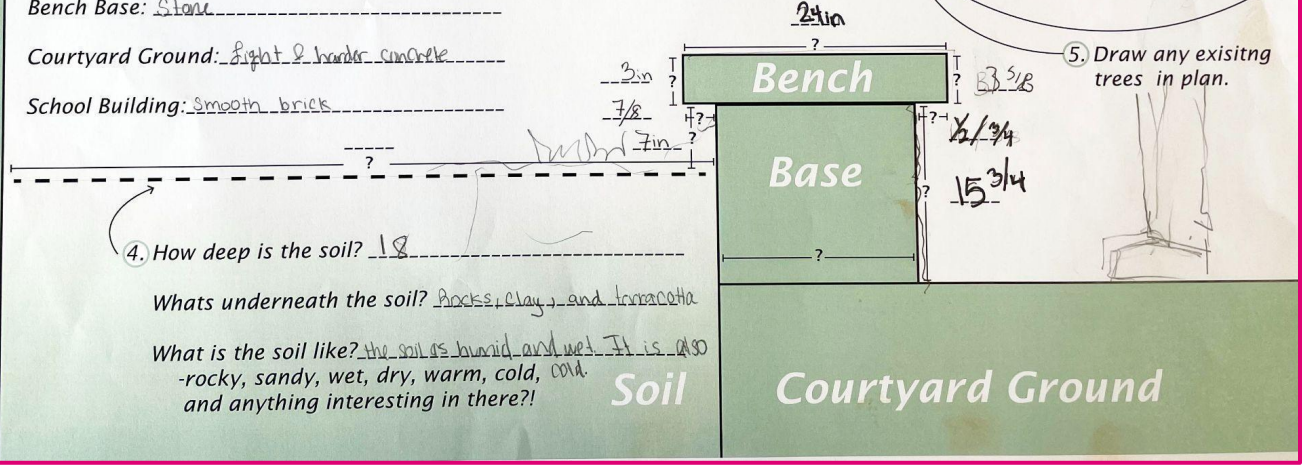
Bench: Darker & smoother concrete

Bench Base: Stone

Courtyard Ground: Light & harder concrete

School Building: Smooth bricks





5. Draw any exisitng trees in plan.

4. How deep is the soil? 18

Whats underneath the soil? Rocks, clay, and terracotta

What is the soil like? the soil is humid and wet. It is also
-rocky, sandy, wet, dry, warm, cold, cold.
and anything interesting in there?!

Let's Brainstorm a letter for Xiye!

Purpose: We're thinking of starting a community garden, what advice do you have?



INTRODUCTION

We are students and we are from Andrew Hamilton Elementary. We're 6th graders and are currently learning about how we can make our community better!

WHY ARE WE WRITING?

We learned about you in class! We learned that you are an indigenous activist, and that you want to protect the earth and make sure it is a healthy place. We want to protect our communities as well.

DETAILS

We want there to be less gun violence in our communities.

We want to stop littering in our communities.

We want COVID out of our communities and we want people to wear their masks!

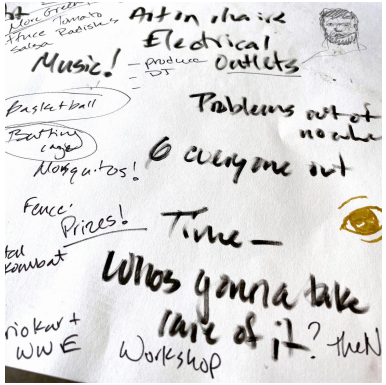
QUESTIONS

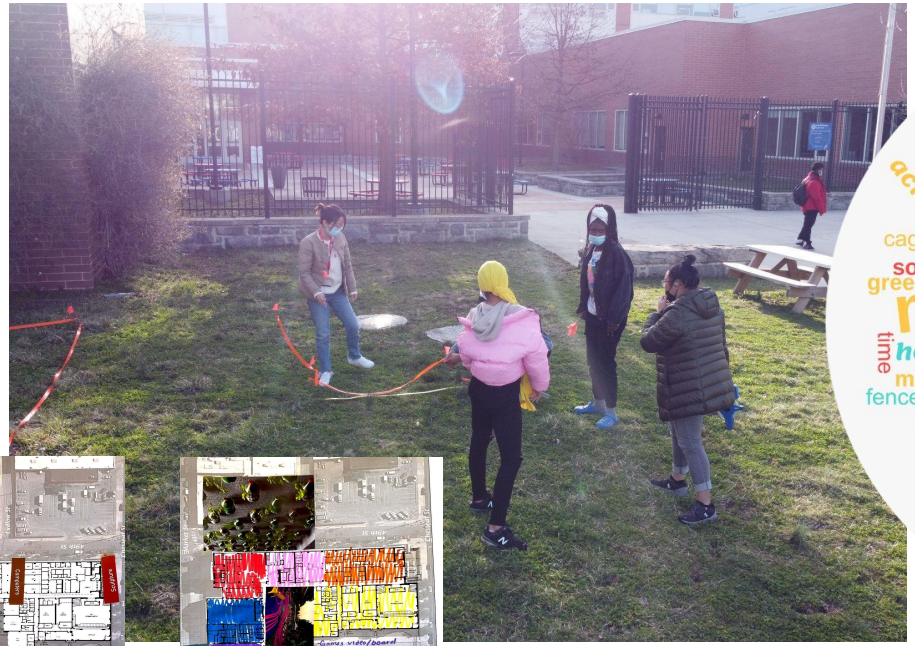
Since you are a climate activist, what advice do you have about how to make our community better? How did you get involved? Was it difficult? Did you come across any problems? How did you solve them?

We will write the Address, Heading, and Closing together later!

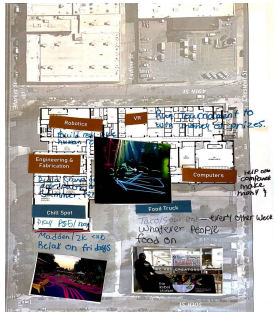

West Lofts (Former WPHS)
WEST PHILADELPHIA HIGH SCHOOL
Student Entry Courtyard
Auditorium
Market-Frankford Line
Gymnasium
Staff Parking
MARKET ST.
50th STREET

Collaborative Design - West Philadelphia High School



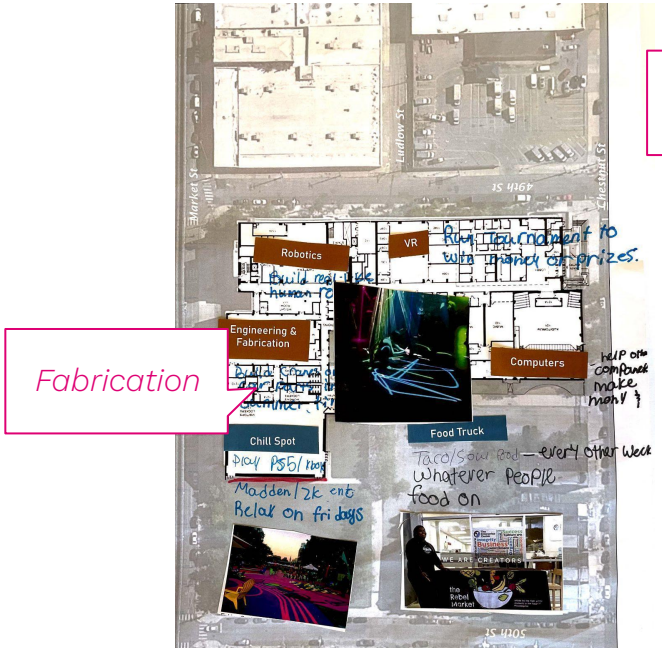




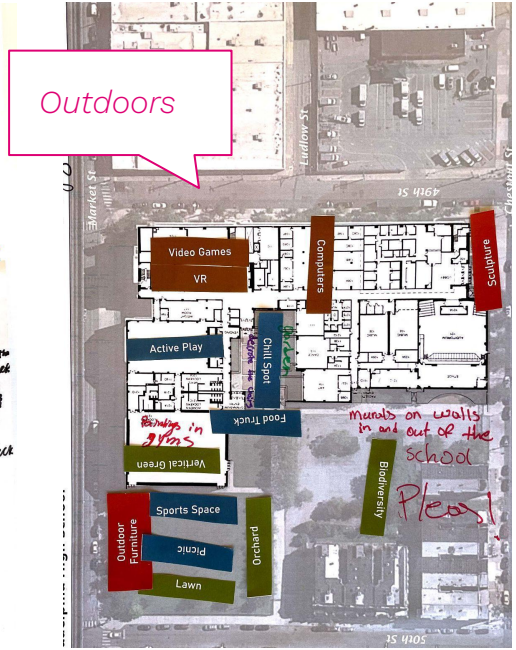




Collaborative Design - West Philadelphia High School



Darryl



Beyogee



Mouye

Collaborative Design - West Philadelphia High School

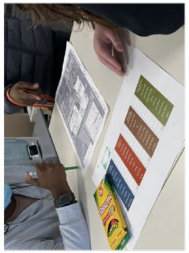


“If it doesn’t have a roof, it’s not cool”

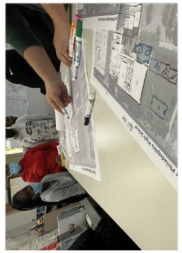
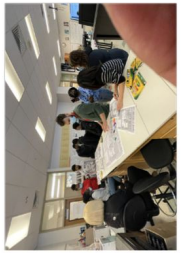


Collaborative Design - West Philadelphia High School





Designing with students and teachers at West Philadelphia High School — And building with youth this summer!










LOCATION



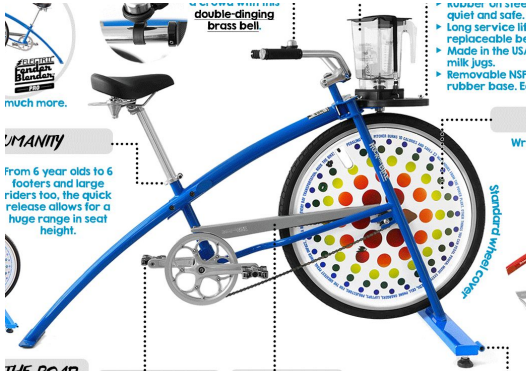



Panic attacks are just as serious as Heart attacks
Therapy is CPR for the Mind

Garden Activities are Integrated into a Comprehensive Approach

Other Netter Center university-community-school partnerships at the site include:

- Mental health
- Sports and physical activity
- Literacy
- Arts
- STEM
- Nutrition



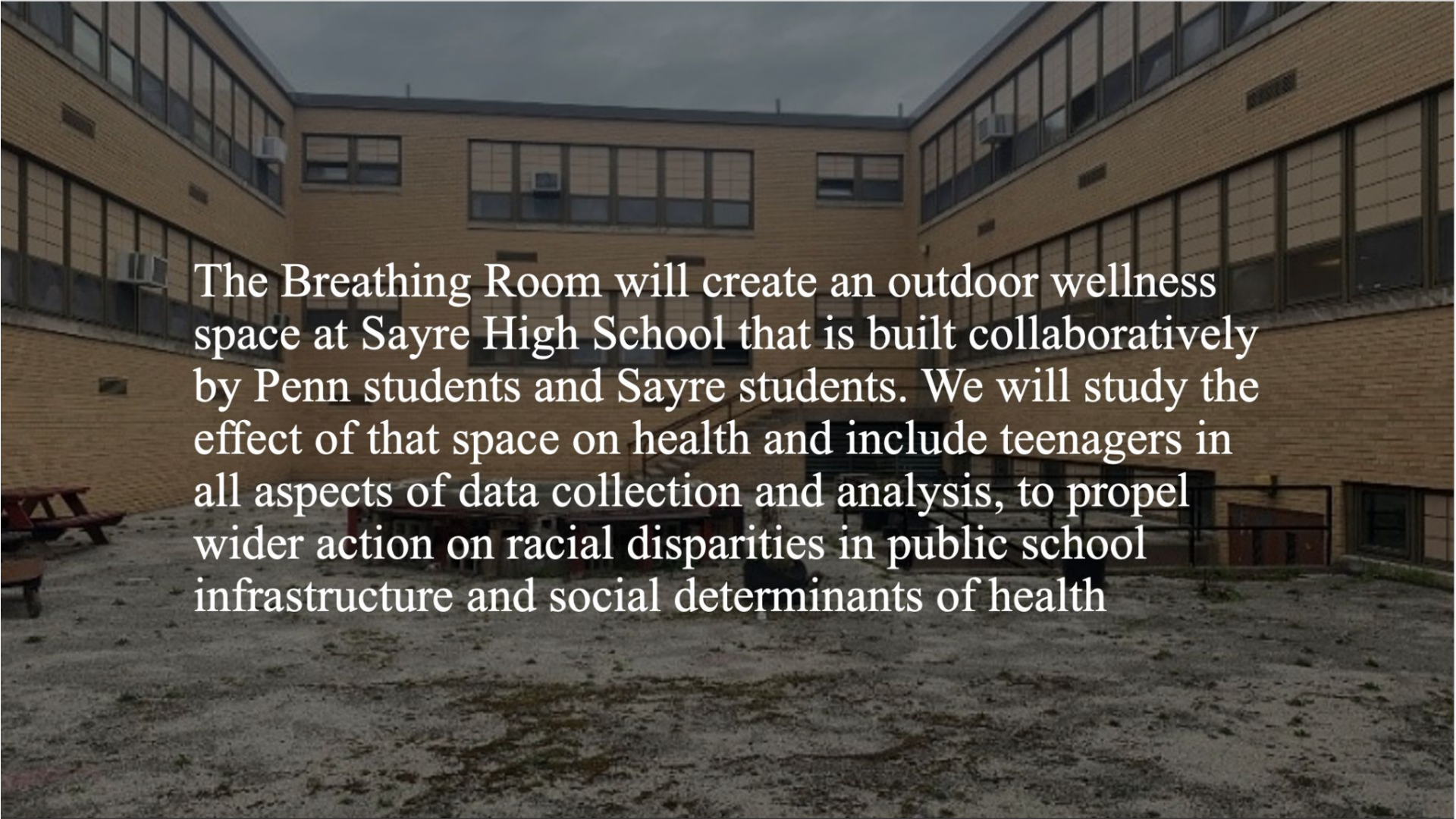
Projects like developing and building smoothie bikes bring programs together for an holistic, integrated approach to supporting young people

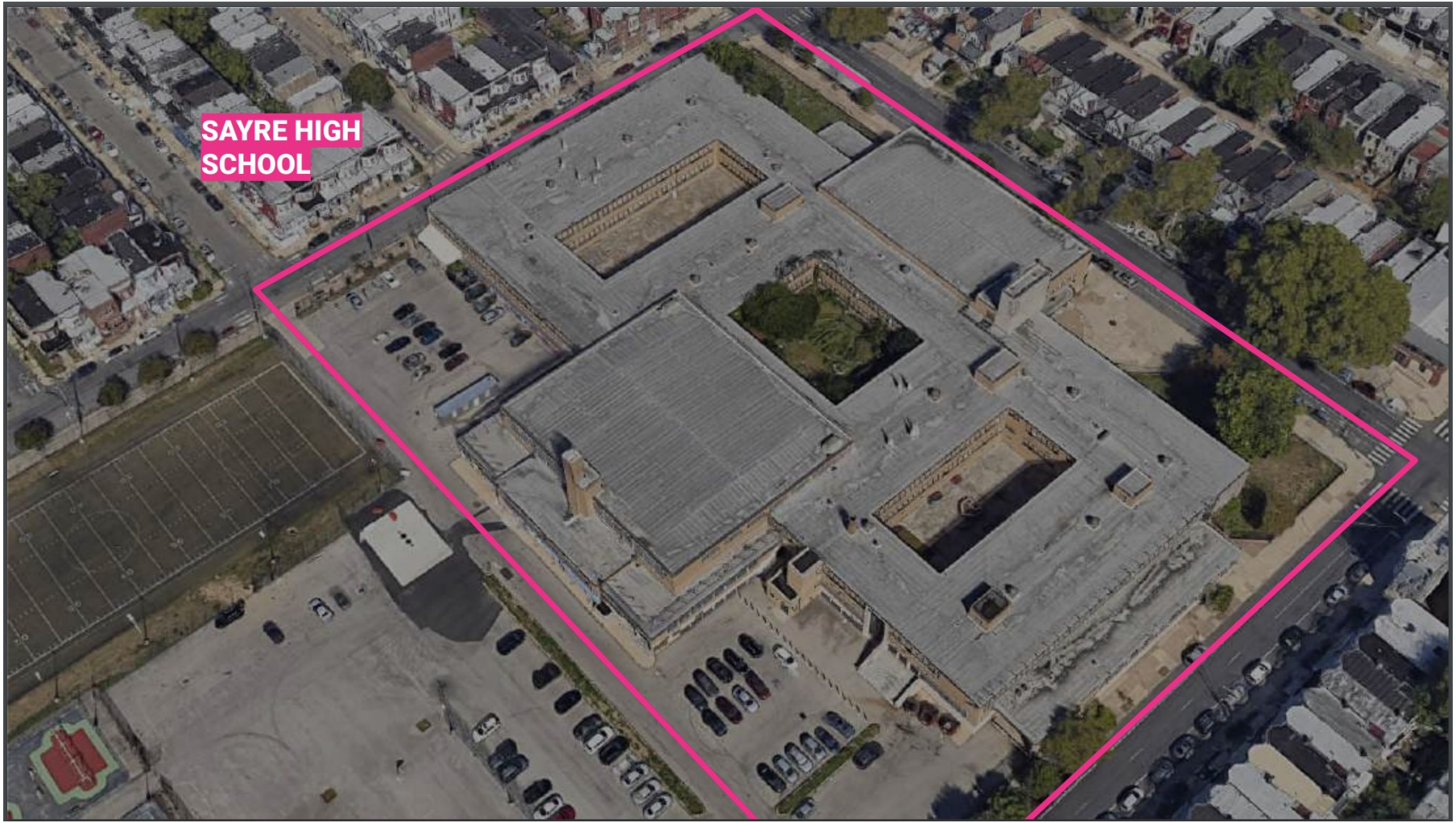


The Breathing Room

A Wellness Space for Youth at Sayre High School

Joseph Brand, MS.NPL - High School Programs Manager, University-Assisted Community Schools, Netter Center
Dyan Castro, M.Arch, MLA - Project Manager + Research Associate, Penn Praxis
H**eather Klusaritz**, PhD, MSW - Adjunct Assistant Professor, Department of Family Medicine & Community Health, Director of Community Health Services, Perelman Medicine Center for Health Equity Advancement
Amanda Peña, LSW, MSW, MCP, City Planning Lecturer, Weitzman School of Design


The Breathing Room will create an outdoor wellness space at Sayre High School that is built collaboratively by Penn students and Sayre students. We will study the effect of that space on health and include teenagers in all aspects of data collection and analysis, to propel wider action on racial disparities in public school infrastructure and social determinants of health


SAYRE HIGH
SCHOOL


THE EAST
COURTYARD


Sayre High School
26% go on to college
11% are on grade level in English
0% are on grade level in Math
90% of the students are Black
7% drop in enrollment over 3 yrs
Next to Sayre Health Center


+17° hotter than
city average



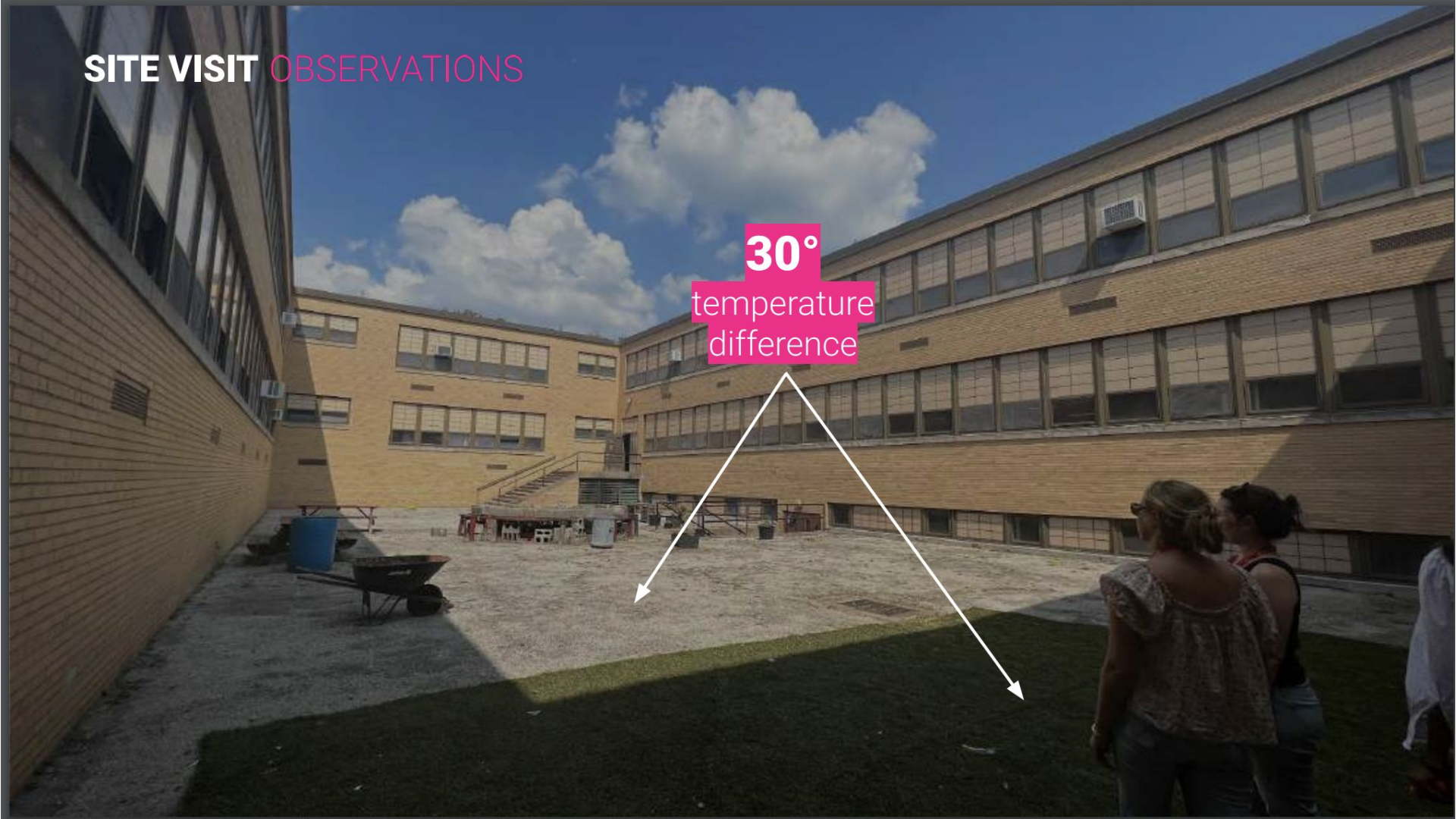

Barren, hot courtyards first priority


SITE VISIT

SITE VISIT OBSERVATIONS



SITE VISIT OBSERVATIONS



SITE VISIT SURVEYING





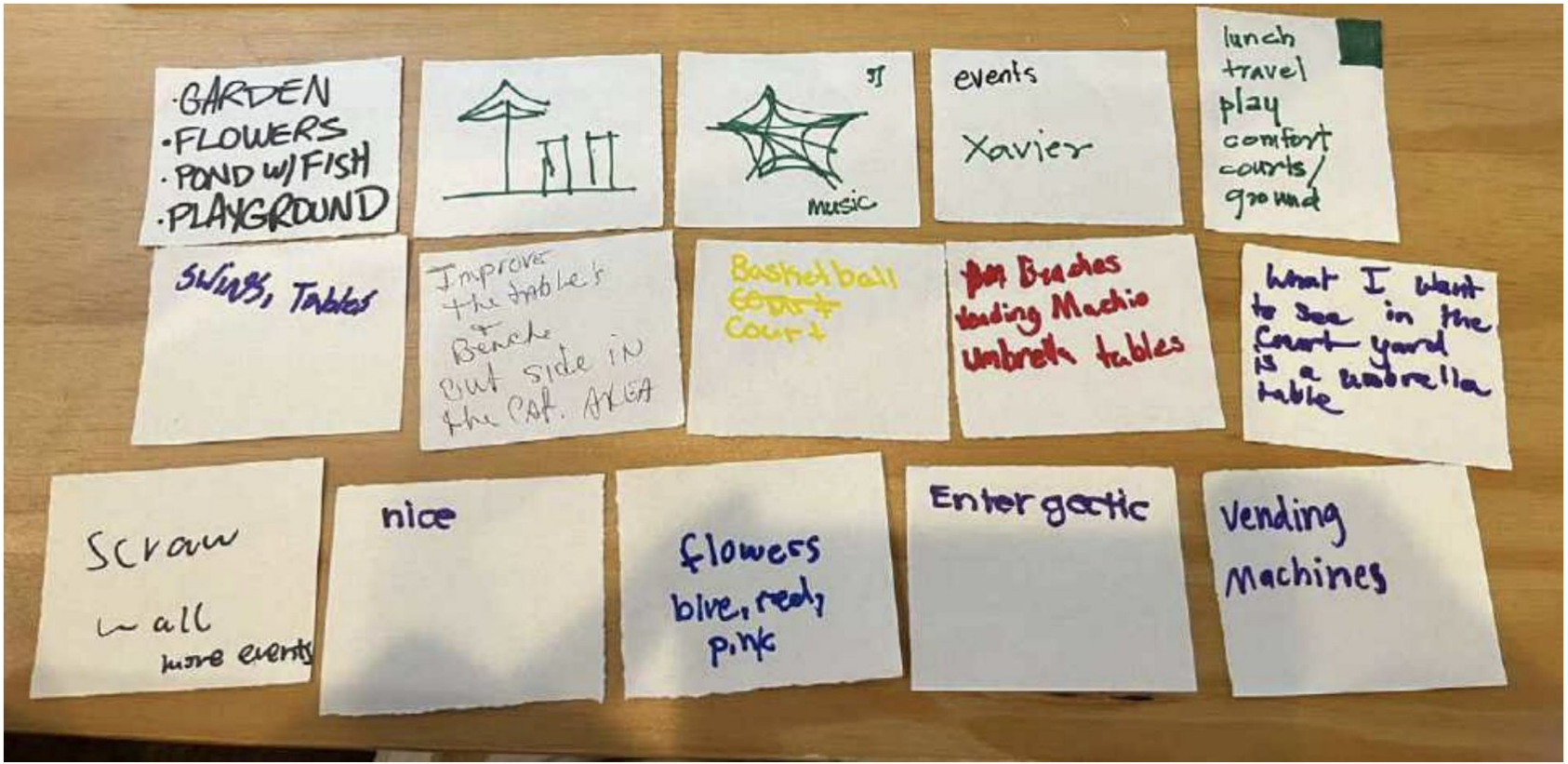




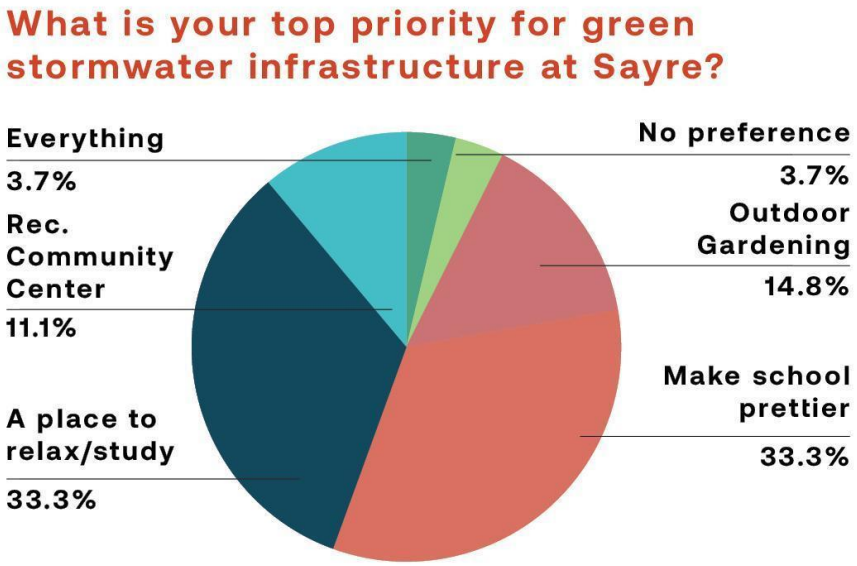
Community Visioning: "What is Your Vision?"

- A place where the students can spend their lunch period so they do not have to spend their time in the cafeteria.
- I would really love to see a place for students and community to gather and enjoy outdoors.
- A more natural look around and inside the building; edible plants to eat; plants/grass on roof
- Outdoor classroom space and a place for science classes to do outdoor studies
- With the pandemic I think it is most important for students to have a green space outside to relax, and where it is safe. There are articles that talk about the number of trees and green space associated with socioeconomic levels.
- The courtyards and grounds becoming green with lots of pretty plants. A garden area to teach students how to grow edible plants.
- Plant edible food and encourage sustainable gardening, involve the school community to prune, weed etc, encourage composting etc.

SITE VISIT MEETING SAYRE STUDENTS



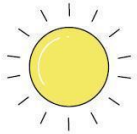
Collaborative Design at Sayre High School - priorities



Collaborative Design at Sayre High School - survey responses



"The flooding made it hard for me to get to work. The temperature in my room can be very hot."

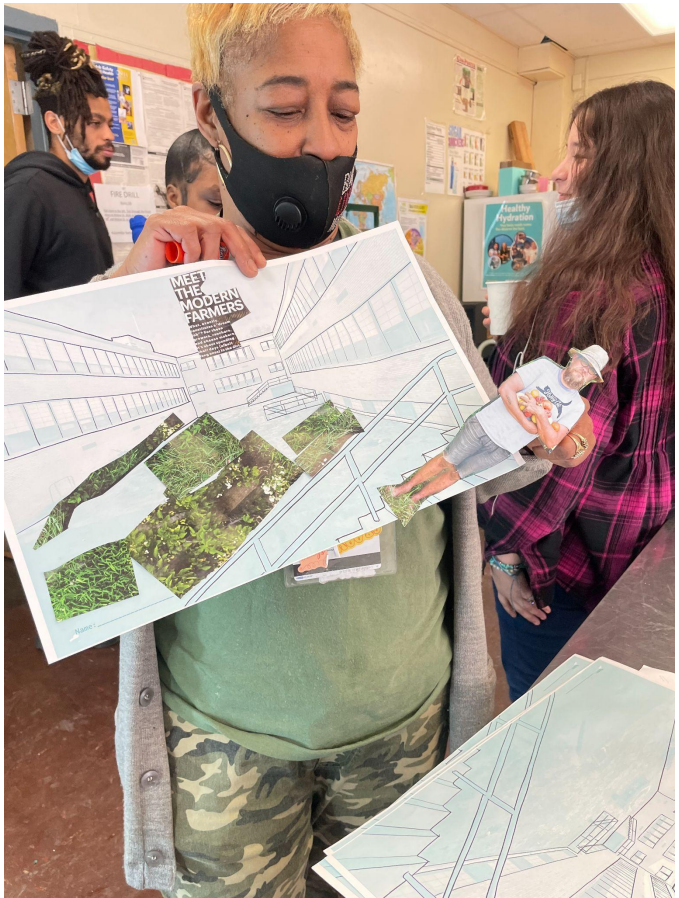


"Very sunny in my classroom all day; it is hot inside the classroom in warm months and cold during the winter months; Little greenery to enjoy."



"It is, sometimes, too hot or cold in the building. It seems it's hard to get the right balance."

Community Visioning: “What is Your Vision?”



“A more natural look around and inside the building; **edible plants** to eat; plants/grass on roof.”

“A place where the students can spend their **lunch** period so they do not have to spend their time in the cafeteria.”

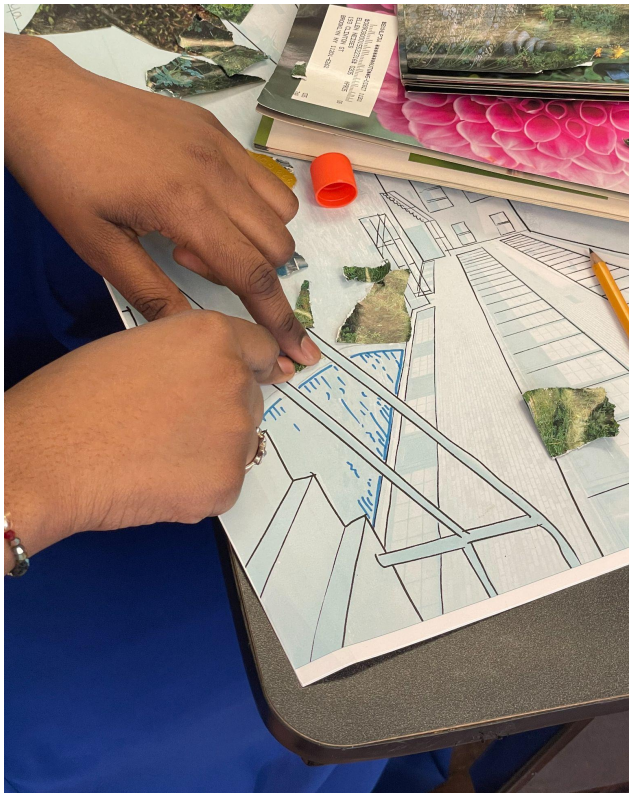
“I would really love to see a place for students and the community to **gather and enjoy the outdoors**.”

“With the pandemic I think it is most important for students to have a **green space** outside to **relax**, and where it is **safe**”.

“Outdoor classroom space and a place for science classes to do **outdoor studies**.”

“The courtyards and grounds are becoming green with lots of **pretty plants** A garden area to **teach** students how to grow edible plants.”

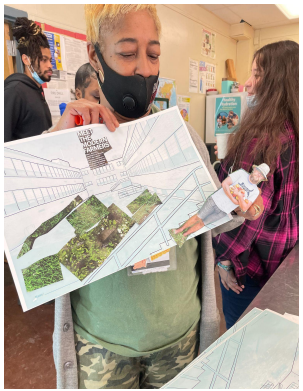
Collaborative Design - Sayre High School



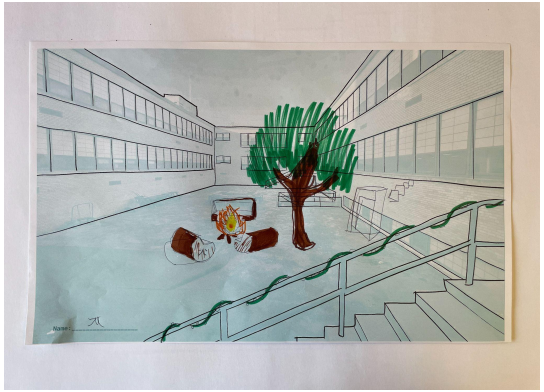


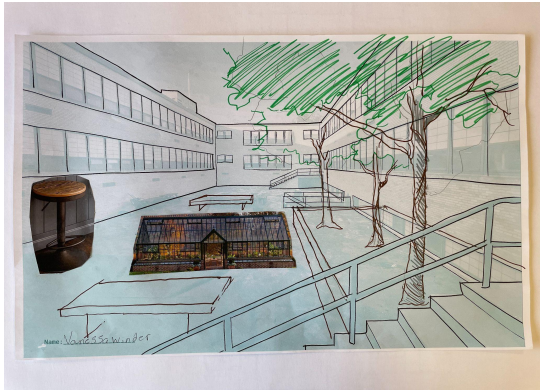






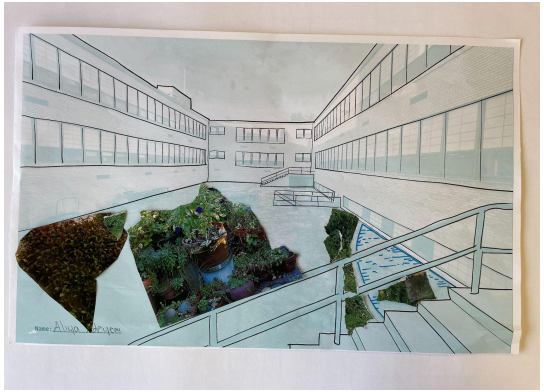
Collaborative Design - Sayre High School

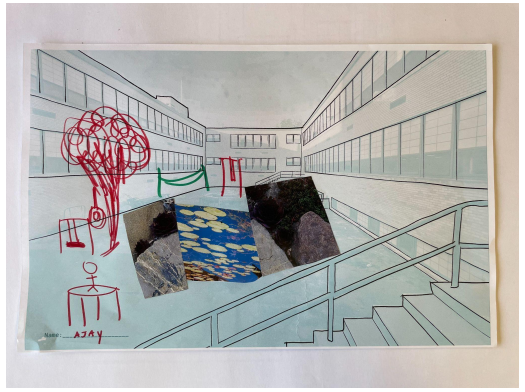












SHOEBOX MODELS EIGHT INDIVIDUAL APPROACHES

Studio+ students also made small study **models** to explore ideas in 3 dimensions










SAYRE BACK TO SCHOOL NIGHT CONNECTING WITH SAYRE COMMUNITY

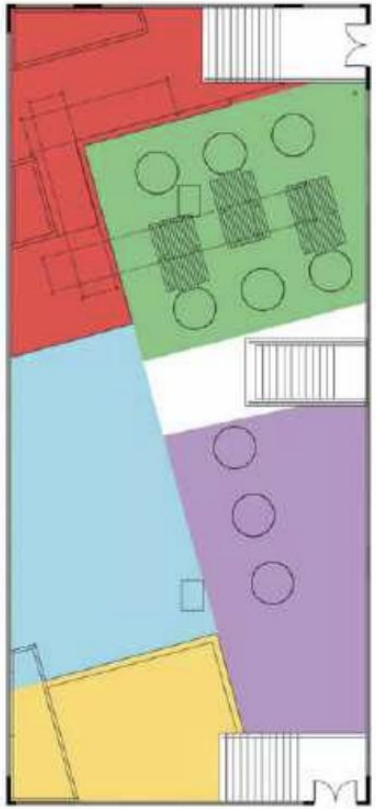






Shared our models + drawings with Sayre students and families
to get feedback and provide updates on courtyard happenings

OUR FINAL DESIGN A COURTYARD FOR SAYRE



THE PERCH
Elevated deck with planting, seating, shade, and colorful birdhouses; can be used as a stage during small events

LUNCH GROVE
Extra long tables and benches for eating lunch, shaded by rows of trees and a webbed shade structure

BOUNCE BLOCK
Bright painted open surface for active recreation that can be converted to gathering space

CHILL ZONE
Area with plants and open space for passive recreation and relaxation

SOUTHERN DECK
Flexible deck that supports multiple activities and remains shady throughout seasons

OUR FINAL DESIGN A COURTYARD FOR SAYRE



PLAN DRAWING



PHYSICAL MODELLING

PLANTING PALETTE SENSORY GARDEN



LAMB'S EARS

Stachys byzantina



HONEY LOCUST

Gleditsia triacanthos



CREPE MYRTLE

Lagerstroemia Muskogee



MUHLY GRASS

Muhlenbergia capillaris



MONDO GRASS

Mondo Grass



CORAL BELLS

Heuchera 'Fire Alarm'

4-SEASON INTEREST

spring **FLOWERS**

summer **SHADE**

fall **COLOR**

winter **BARK**



DAFFODILS

Jonquilla daffodils



ASTERS

Aster alpinus



WINTERBERRY

Ilex verticillata

SHADES OF SAYRE COURTYARD GROWTH







MOVING SOIL WITH BUCKETS



Filling buckets with soils delivered to the Sayre parking lot

Sayre student helpers!



Emptying buckets into **courtyard planters**

PLANTING FROM THE NURSERY TO THE PLANTERS



Tagging plants at the **nursery**



Pulleying trees up and down stairs



Putting trees in planters w/ Daniel's homemade **gantry**


courtyard before the project







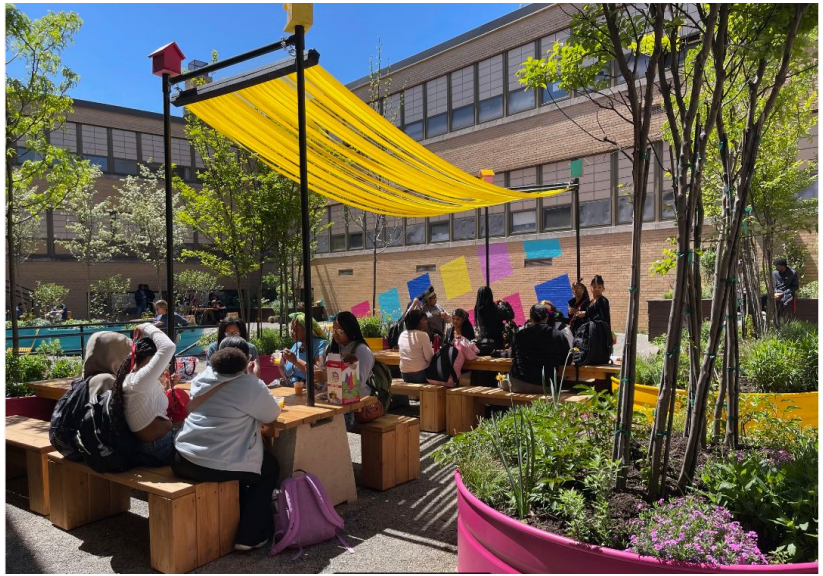


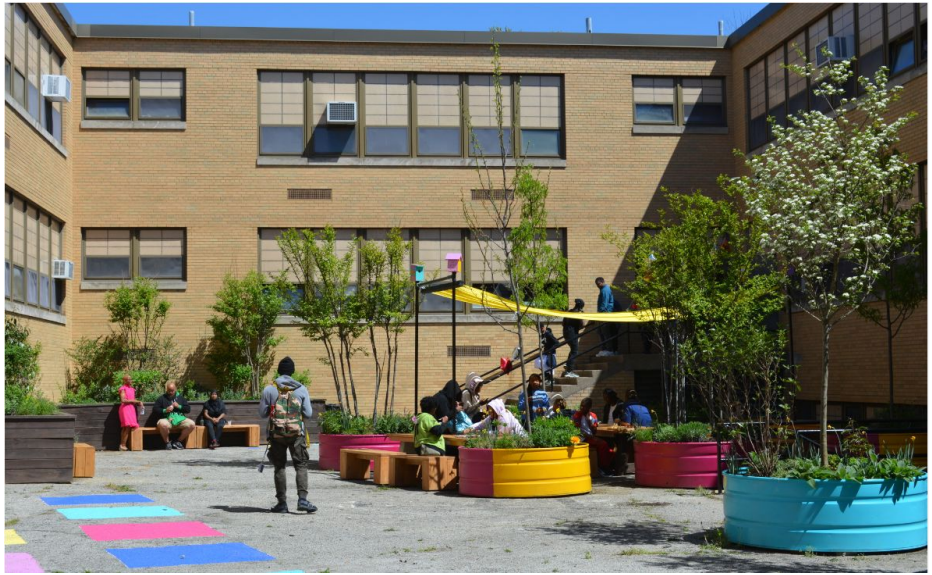


Image: Drone footage of the Breathing Room in late June 2024, photo credit to Abdallah Tabet – Odette.

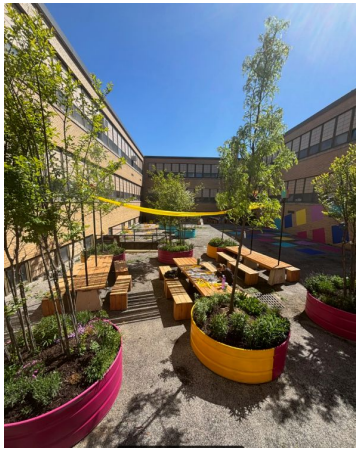













SAYRE COURTYARD
GLOW UP
2024
SAYRE COURTYARD
GLOW UP
2024

Solar and Hamilton, Penn Carbon Offsets

Announcement About Climate Impact Offset Charges

SEPTEMBER 7, 2021 | **VOL 68 ISSUE 4** | **NEWS** | **PRINT**

Effective July 1, 2021, a Climate Impact Offset (CLIO) charge is applied to Penn business travel, whether the travel is booked or expensed through Concur, the University's travel management system. This new program, included in Procurement Policy 2371, formalizes the University's commitment to sustainable travel and is in alignment with Penn Compact 2022 and Penn's Climate and Sustainability Action Plan 3.0 (CSAP 3.0).

The fees that will be collected as part of this initiative ($11 for domestic flights and $25 for international flights) are an important part of the University's strategy to address activities such as the carbon emissions resulting from air travel. Penn is taking a careful and targeted approach to carbon offsets, which broadly refers to any activity that leads to a reduction in emissions of carbon dioxide or other greenhouse gases to compensate for emissions made somewhere else. Carbon offsets are often described as a practical and effective way to address climate change and encourage the growth of renewable energy.

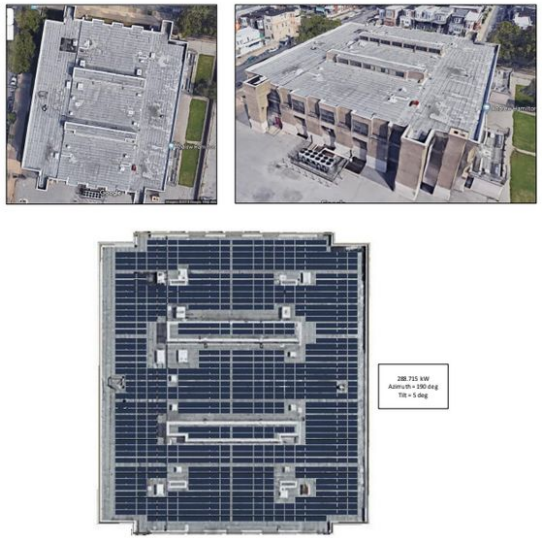
Initially, CLIOs will counteract air travel emissions by purchasing offsets from a market provider. The University will also be seeking to invest the proceeds in verified carbon offset projects, like improving air quality, reducing urban heat island effect, and improving economic conditions locally.

With the creation of CLIOs, and through the ongoing management of Penn's Travel Sustainability Fund, the University will continue to engage Penn's faculty, staff, and students in the pursuit of addressing Penn's carbon footprint.

Attachment 2

Andrew Hamilton School Solar Project Design

(a) Roof Plan



UACS approach: integrating and aggregating university, community, and school resources

University of Pennsylvania collaborators include:

- Garden staff
- Connected to Academically Based Community Service courses, research, and projects in School of Arts and Science, Wharton School of Business, Weitzman School of Design and Penn Praxis, School of Engineering, School of Nursing, Graduate School of Education, Annenberg School of Communication, and Perelman School of Medicine
- Penn Sustainability Office and the Environmental Innovations Initiative
- Philadelphia Higher Education Network for Neighborhood Development

Thank you! Questions?