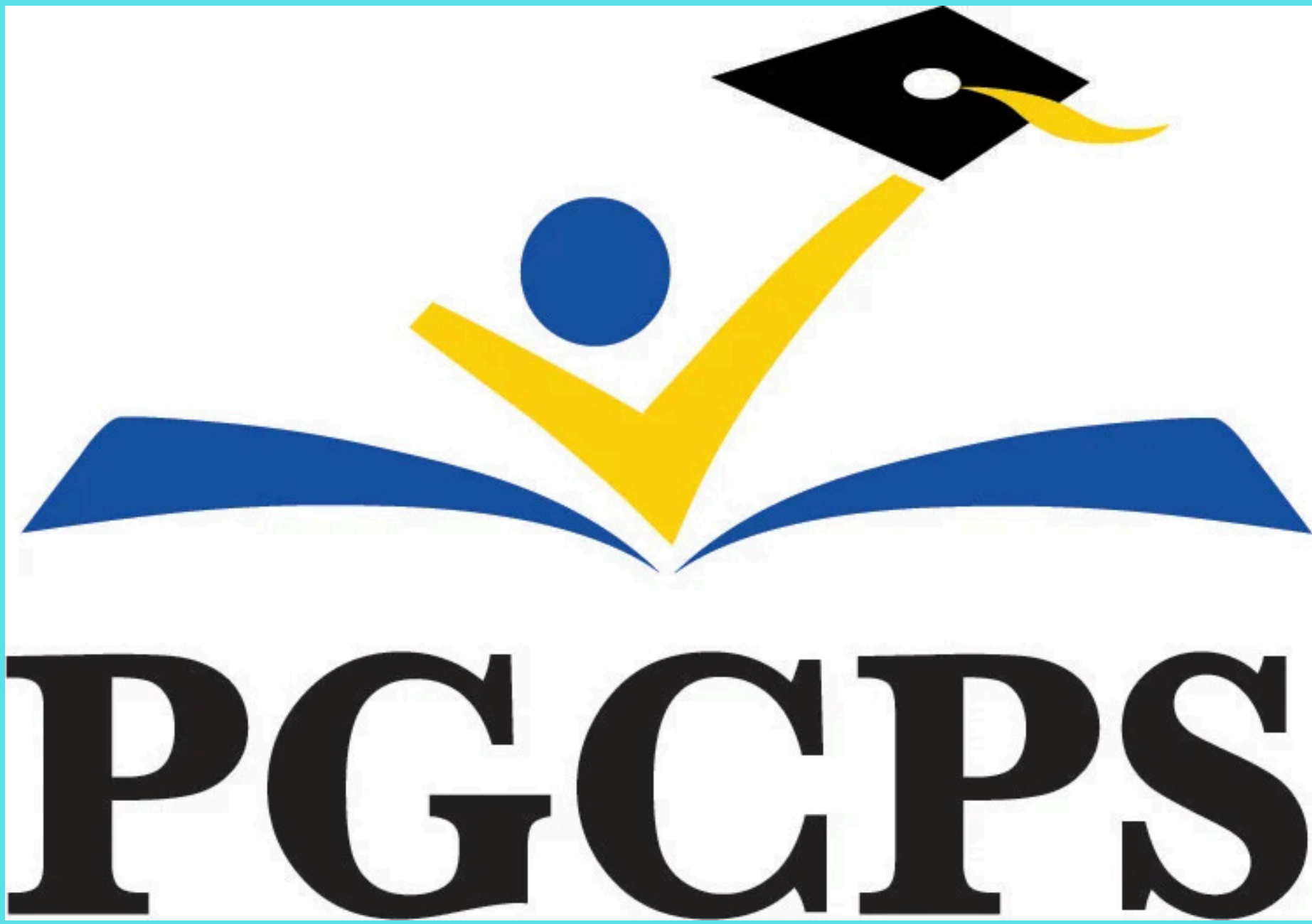# Empowering Students and Educators as Community Ambassadors for Environmental Justice
Integrating Air Quality Education into K–12 Science Curricula

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🌎 **Prince George's County Public Schools** |

cleanairpartners.net

## The Big Problem: Why Air Quality Matters

- Environmental injustice is real: Communities of color are exposed to more pollutants (ALA, 2023; EPA, 2022).
- Students in these communities live the problem - this project makes them part of the solution.
- Health implications: Asthma, cardiovascular disease, and long-term developmental issues.

- How do we make air quality matter in traditional science curricula?

- What are some best practices for environmental and health data collection?

Project Design & Implementation

- Classroom Integration: Aligned with NGSS and district curriculum
- Sensor Use: Students deploy and interpret low-cost air quality monitors
- Placed-Based Learning: Focus on neighborhood-specific issues
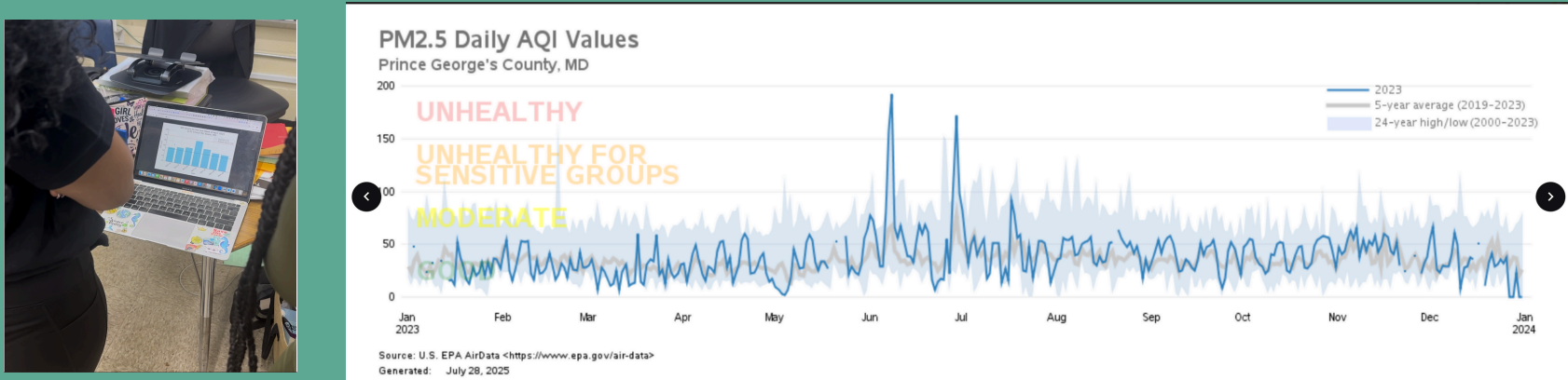
- Which technologies are most effective for the classroom and field data collection and why?

- What responses can we expect from students collecting real data?

Our Vision & Guiding Questions

Goal: Build student advocacy in addressing air quality and environmental justice.

Equip students to:
- Collect and analyze real-time local air quality data
- Identify pollution sources
- Advocate for change

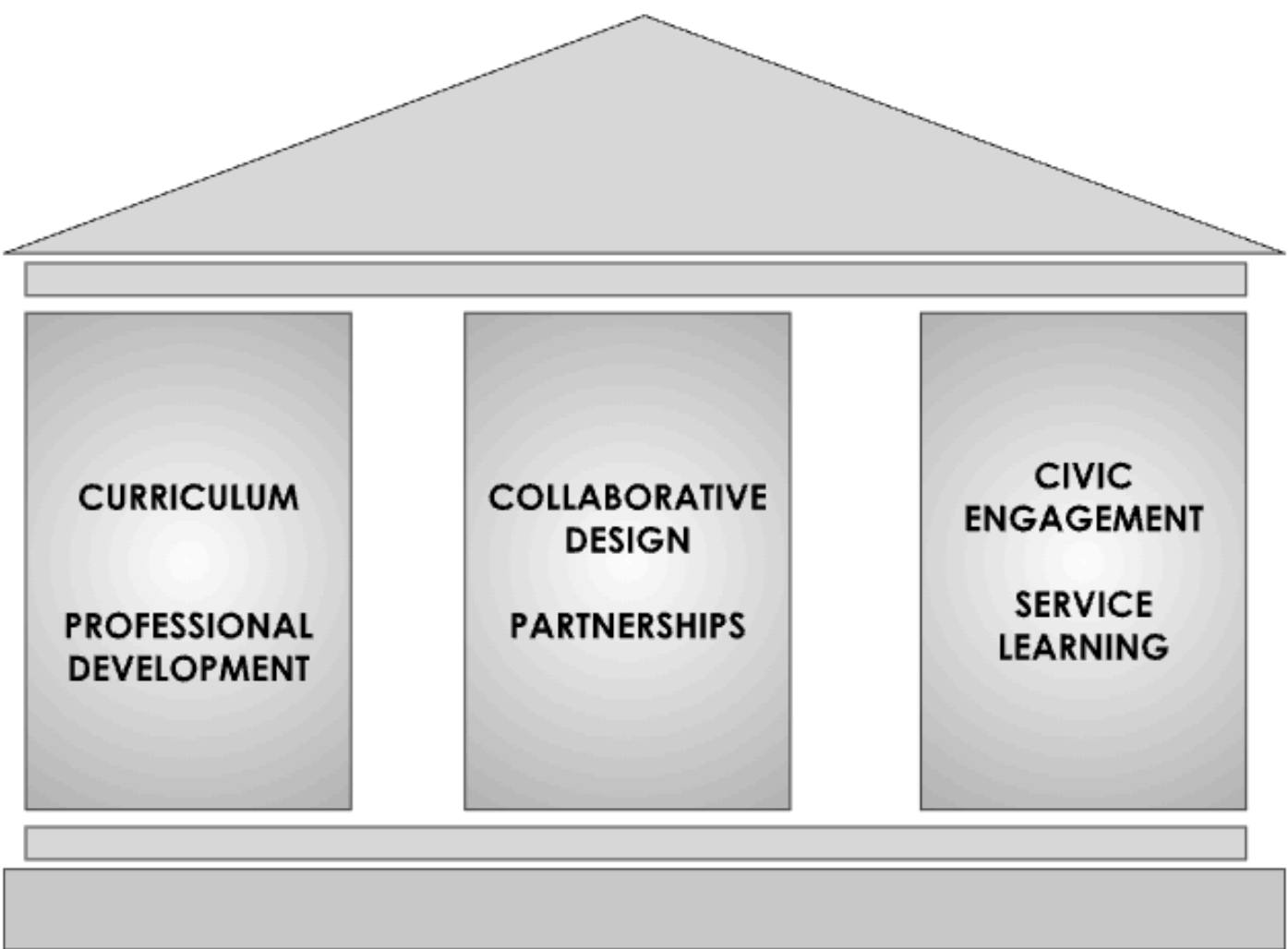- What do students typically notice about their environment?

Professional Learning Community (PLC)

Training Participants:
- Teachers from middle and high schools across PGCPS
- Support from environmental organizations and community partners: Clean Air Partners, Katerra, Attune, YLACES, and the Mayland Department of the Environment

Training Products:
- Co-develop units & lesson plans
- Facilitate workshops on data literacy and equity
- Share and analyze student projects

QR Code for Sample PLC Agenda →

- What are some validated methods to build teacher confidence?

- How can teacher questions inform our planning?

CURRICULUM | COLLABORATIVE DESIGN | CIVIC ENGAGEMENT
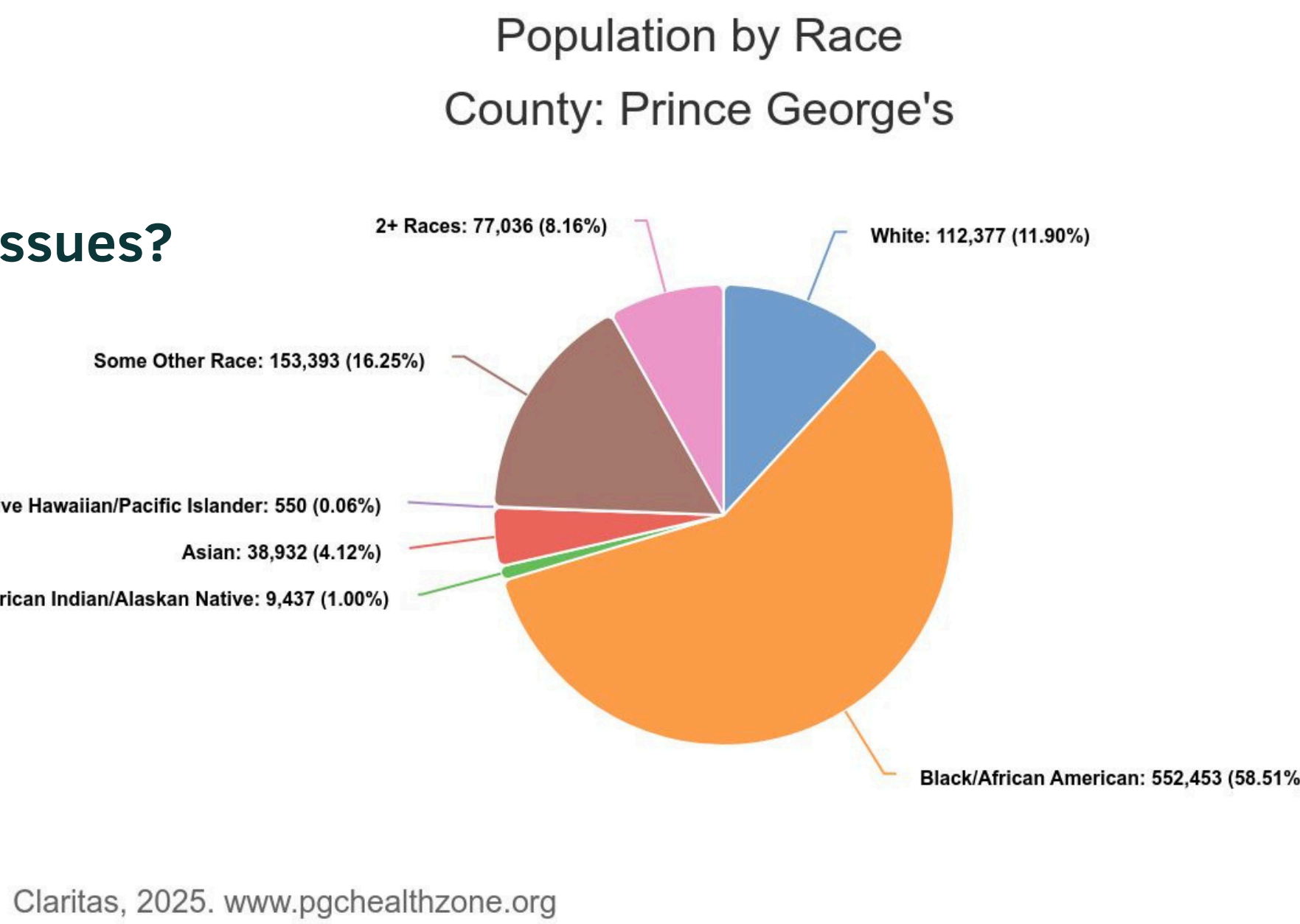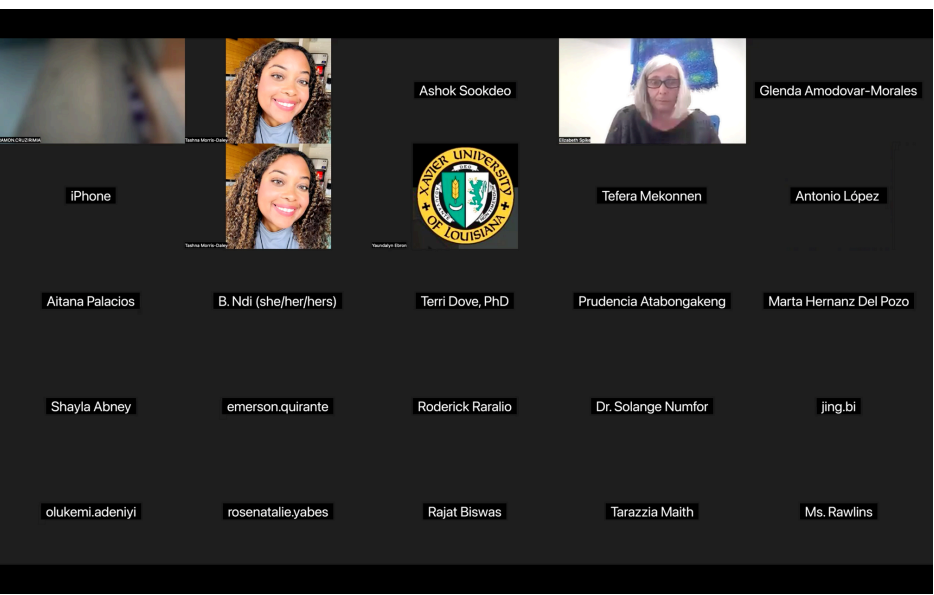PROFESSIONAL DEVELOPMENT | PARTNERSHIPS | SERVICE LEARNING

Equity Focus & Environmental Justice

Training Topics:
- Data Disparities: Tessum et al. (2021) - racial/ethnic disparities in PM2.5 exposure
- Student Identity: Students see their lived experiences reflected in the data
- Advocacy: Students explore how pollution connects to policy, infrastructure, and justice,

- What stories can students tell with their data?

- How can students connect air quality to social issues?

Monthly Air Quality PLC Meeting

Population by Race
County: Prince George's

2+ Races: 77,036 (8.16%)
White: 112,377 (11.90%)
Some Other Race: 153,393 (16.25%)
tive Hawaiian/Pacific Islander: 550 (0.06%)
Asian: 38,932 (4.12%)
erican Indian/Alaskan Native: 9,437 (1.00%)
Black/African American: 552,453 (58.51%)

Claritas, 2025. www.pgchealthzone.org

Bad Air Quality   **Good Air Quality**

Student Impact & Assessment

- Pre/post surveys: knowledge of AQ, systems thinking
- Reflections on advocacy skills
- Final projects (data stories, presentations, campaigns)

Example Student Quote:
"I never knew I could use science to speak up for my neighborhood."-Student

- What do we want to know about student growth and why?

- How do we measure advocacy in traditional classrooms focused on standardized tests?

Community & Curriculum Co-Creation

- Co-developed lessons with:
  - Clean Air Partners
  - Local environmental orgs
  - Teachers from across disciplines within PGCPS
- Embedded civic action, climate justice, and service learning connections

- What beliefs, values, and practices make partnerships work for the long term?

- How do we ensure authenticity and mutual benefit?

What's Next & How You Can Help

Seeking:
- Funding for more sensors and long-term scaling
- Cross-district and cross-state collaborations
- Input on evaluating student-led advocacy
- Recommendations or continuous professional development

What would YOU add to this work?
(Use QR code to give feedback)

- How do we expand on this project?

- What are your biggest takeaways?

Authors

Tashna Morris-Daley - PGCPS
Elizabeth Spike - Clean Air Partners

Ethical principles for ecology and environmental ethics:
What ecology can learn about applied ethics from biomedical ethics

Elizabeth Spike, Jeffrey P. Spike
October 11, 2024
Earth Stewardship
ESA Open Access Journal

References

- American Lung Association. (2023). State of the Air
- Environmental Protection Agency. (2022). Environmental Justice and Air Quality
- Tessum, C.W., et al.(2021). PNAS, 118(16), e2014749118

PM2.5 Daily AQI Values
Prince George's County, MD