

School Day Partnerships at West Philadelphia High School



Netter Center
for Community Partnerships
UNIVERSITY of PENNSYLVANIA

Agenda

- **2:45-3:45 pm** Academically-Based Community Service Classes (ABCS) at West Philadelphia High School
 - Case Studies
 - Panel discussion
 - Q&A
- **3:45-4 pm** Welcome from School Leadership
- **4-4:30 pm** High School Student Panel ft. UACS After-School Programs



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Panelists

Dr. Lori Flanagan-Cato, Associate Professor of Psychology and Co-Director Undergraduate Neuroscience Program at Upenn. ABCS practitioner for the last 8 years.

Dr. Philip Nelson, Professor of Physics, Department of Physics and Astronomy at Upenn. ABCS practitioner for the last 4 years.

Dr. Ryan Batkie, Instructor, Department of Physics and Astronomy, former public school teacher and teacher educator. ABCS practitioner for 3 years.

Ankita Reddy MD/PhD student, Provost's Academic Engagement Fellowship (PGAEF) recipient. Perelman School of Medicine at Upenn. ABCS practitioner for one year.

Mr. Brendan Zimmie, physics and mathematics teacher, West Philadelphia High School. ABCS practitioner for two years.

Mrs. Marie Wilkins-Walker, Computer Systems Networking Teacher, CTE teacher leader; many years working with the Netter Center in different capacities.

Zac Steele, Moelis Access Science Director, Netter Center for Community Partnerships. Former public school teacher. ABCS practitioner for two years.

Academically-Based Community Service (ABCS) Course Strategy

- These classes are rostered at Penn across a variety of different disciplines and involve a community engaged component.
- Integrate service, teaching, research, and learning.
- Help solve universal problems as they are manifested locally.
- Designed to improve the quality of life and learning in the community and the quality of learning and scholarship in the University.
- Help students to become active, creative, contributing citizens of a democratic society.
- Ideally involve co-planning between University faculty and K-12 teachers.

At Penn...

- 1991-1992: 4 ABCS courses
- 2000-2001: 38 ABCS courses
- 2010-2011: 62 ABCS courses
- 2023-2024: 82 ABCS courses



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Physics 0137 - ABCS



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Vision/process

a) A brief summary of the vision and process of bringing the Community Physics Class to West Philly High - how we generated the curriculum together as a collaborative process, and how Zimmie was able to work with the school to create a physics 2.0 class structure.

- Met stakeholders nearly one year in advance. Many thanks to Zachary Steele for keeping us on track. Carefully considered which term we should come (Spring/Fall). Actually moved our class from Fall to Spring to mesh better with WPHS.
- Secured generous Netter Center grant for apparatus.
- Selected Penn students based on commitment more than disciplinary background. We made no effort to select based on diversity, and yet the Penn students were a far more diverse group than, say our Physics majors.
- Selected WPHS students based on <Zimmie discuss>.
- Goals were to touch real apparatus, work in exploratory mode, but guide WPHS students to making quantitative measurements, graphing them, observing mathematical forms of relations.
- Subtext was to engage math skills (functions; geometry; trigonometry) in physical-world contexts.
- But due regard for the wonder of science -- very weird things are not only true but reproducible, and obedient to subtle but consistent laws. Themes introduced in one context have validity and explanatory power in other contexts. Examples:
 - . (energy in mechanics) --> (energy in electricity)
 - . (vibrations of a string exhibit resonance) --> (sound exhibits resonance)
 - . (waves of light carry energy) --> (waves of sound carry energy)

Impacts

b) The impacts of the class on Penn students and high school students. How does this pedagogy further deep and active learning experiences for both groups?

Penn students:

- Discipline-based impacts:

- . All of the preceding points were new to some of the Penn students, and to the others, they were at best symbolic abstractions vaguely remembered from first-year physics. This has changed.

- . All the Penn students completed a written assignment whose goal was to work out an improved form of 2-slit interference that not only is *missing from every first-year text*, but also *explained a phenomenon clearly visible in the experiment they carried out* with students.

- Non-physics impacts:

- . All the Penn students gained confidence dealing with different kinds of students, insights into what makes any education hard, and what specifically makes urban education hard.

- . The Penn students constructed their own lab experiences, working within the broad constraint of relevance to Zimmie's course, responding to requests and suggestions from WPHS students, and available apparatus.

WPHS students: <Zimmie discussed>...

- . Real friendships arose between the Penn and WPHS students – to the point where WPHS students invited us to their dance performance (and the Penn students actually went), etc.

- . We overheard conversations not just about life in general but about college study. Knowing even one person who is farther along in their development is one of the very strongest motivators, and helps the younger person to visualize themselves in that place.

Inquiry

c) The potential for this type of experience to generate interest in real scientific inquiry. How does this type of experience differ from more traditional text-based scientific inquiry?

- It is completely different in every way. High school students (and students in Penn's first-year Physics courses) don't get a lot of opportunities to ask "What if?" questions and then meaningfully pursue them. They're too busy getting the "right" answers to catechismic questions divorced from experience.

- Zimmie also gets to weave in "remember when we..." moments into his course, retain our sketches on the classroom wall, etc.



Strengths/challenges

What are some strengths and challenges of the model?

- Strength: Abstractions come to life. "What-if" questions get answered either immediately or within one week.
- Challenge: We covered only a tiny fraction of a complete Physics course. This is no substitute for a regular course.
- Summary: The combination of our experiential class with a regular course is more powerful than either by itself.

- Strength: Quantitative, evidence-based reasoning is valuable in many aspects of life, whether or not you end with a STEM career.
- Challenge: Although we say that, we need to make it more clear and insistent. (Water leaking into house... floor lamp stops working...)

- Strengths: Penn Physics contributed the effort of Dr Ryan Batkie, a paid staff member with a background in high-school science teaching. Netter Center contributes leadership but also logistics, freeing Physics staff to focus on the teaching.

EVERYDAY PSYCHOLOGY

- New Course.
- Counts for psychology major “research experience” requirement.
- Fifteen Penn students, 15 HS students.
- Fridays: Penn students learn about community engaged research, develop research questions.
- Wednesdays: Teaching-learning groups at the high school to support AP psychology.

Penn student work:

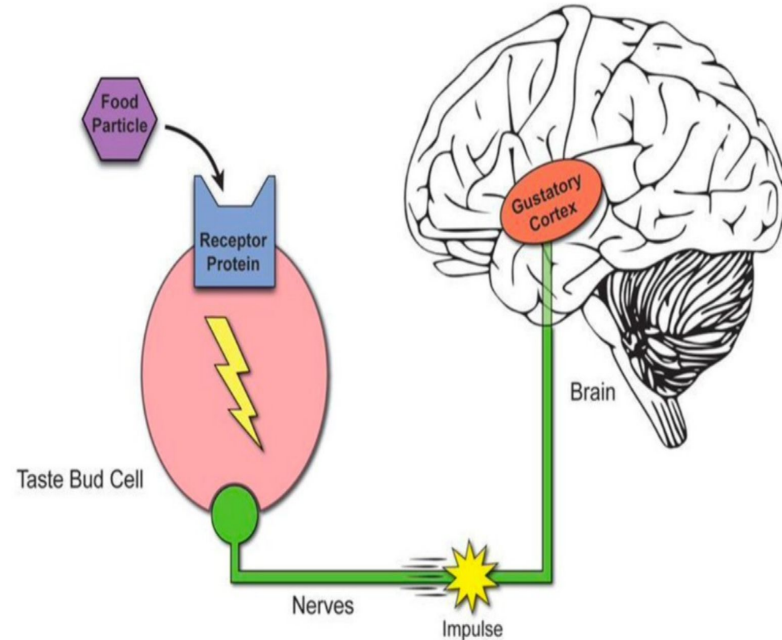
Lessons provide content and hands-on learning

Describe the process by which a taste is conveyed from a food particle to the brain. (Hint: use the word bank and diagram below)

Taste moves through the _____ in the following steps.

1. A _____ binds to a _____ on a taste bud cell.
2. _____ convey the impulse from the _____ to the _____ of the brain.

Taste Receptor	Neurons	Sensory Nervous System
Gustatory Cortex	Food Particle	Taste Bud Cell



Penn student work

Each month, students must write a reflection on their teaching-learning experiences.

Students get a strong initial exposure to research, reading journal articles, developing a research question, interrogating literature, embarking on simple data collection, writing a research report.

Students do a lot of collaborative work: teaching, journal club presentations, and data analysis.

STRENGTHS/CHALLENGES

Penn students are excited to teach psychology.

West students have been very interested in learning.

Presence of Mr. McClintock removes any need for attendance/behavior management.

Penn and West class times do not align, therefore class time is a bit short.

WHY THIS WORKS

NETTER CENTER STAFF

FACILITATED SCHOOL PARTNERSHIP
IN-BUILDING COORDINATOR
TRANSPORTATION
COURSE DEVELOPMENT GRANT

PENN STUDENTS

ENTHUSIASM AND STRONG ENROLLMENT

WEST STAFF AND STUDENTS

GREAT COMMUNICATION
STUDENTS ARE BRIGHT AND ENGAGED

EXPANSION?

Psychology Department has requested this course be offered again next year.

Penn students are developing plan for additional tutoring for the AP exam.

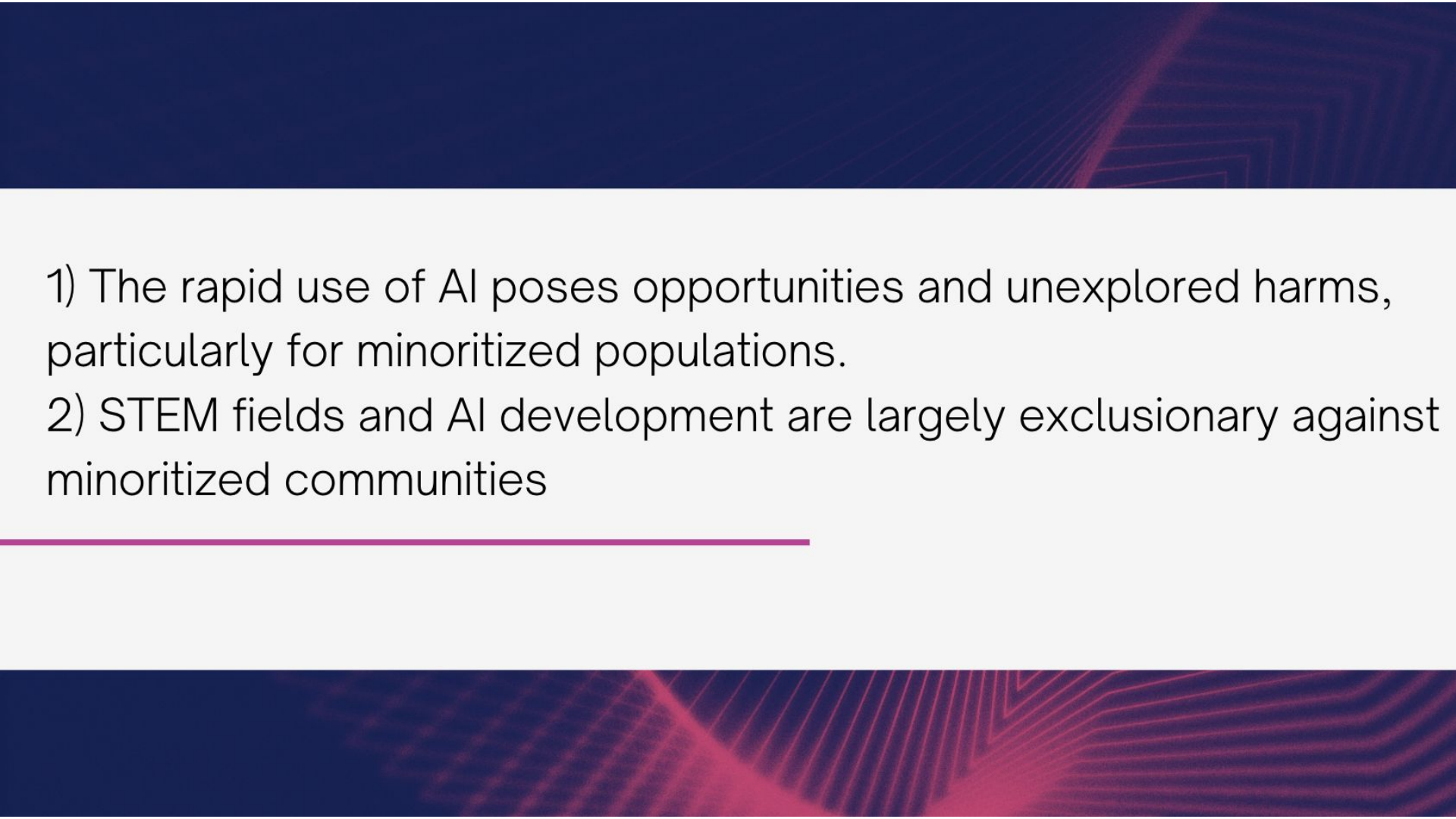
Building the *AI* Toolbox:

Exploration & Ethics of AI with West
Philadelphia

Fall 2024



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- 
- 1) The rapid use of AI poses opportunities and unexplored harms, particularly for minoritized populations.
 - 2) STEM fields and AI development are largely exclusionary against minoritized communities
-

PHASES



Seminar-based Training & Curriculum Design

- Location: Penn Campus
- 7 modules, 90 minutes for each module: 45 minutes discussion, 45 minutes curriculum design
- Discussion sections will focus on relevant AI ethical frameworks and literature
- Curriculum design focuses on applying these frameworks into teaching activities



Teaching in West Philadelphia

- Location: West Philadelphia High School (WPHS)
- Class: computer systems
- 8 modules; 1 module per week (8 wks total)
- 90 minutes for each module: 45 minutes teaching/activity, 45 minutes project



Dissemination & Future Work

- Disseminate findings of pilot through research article, presentations, development of full course, etc

A wide-angle photograph of a large, modern brick building, likely a university or government structure. The building features a prominent entrance with a covered walkway and a set of stairs leading up to it. There are several large windows, some with white frames. To the left of the main building, there is a smaller, white, rectangular structure. The foreground shows a paved area with some trees and a few people walking. The sky is clear and blue.



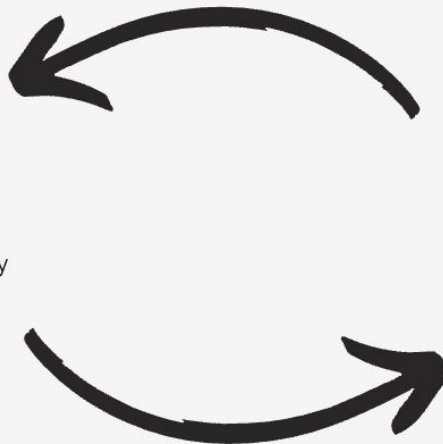
Ms. Wilkins-Walkers' computer systems class for high school juniors and seniors



Model of Community-Engagement

Penn students

- AI ethics discussion-based seminar to inform work
- Curriculum designing
- Direct engagement with Philly community through teaching to inform own work in academia or industry



West Philadelphia High School Students

- Learn about and creatively engage with AI basics and ethical frameworks
- Exposure to STEM fields and opportunities to meet graduate students!

PREVIEW OF TOPICS COVERED

- Encoding bias // race // gender
- Relational ethics approach to AI
- Inclusion
- Data Privacy and governance
- E-Carceration // war
- Surveillance

More than a Glitch

< Confronting Race, >
< Gender, >
< and Ability Bias >
< in Tech >

Meredith Broussard

Patterns

CellPress
OPEN ACCESS

Perspective

Algorithmic injustice: a relational ethics approach

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<https://doi.org/10.1016/j.patter.2021.100260>

THE BIGGER PICTURE. Machine learning (ML) increasingly permeates every sphere of life. Complex, context-fuel, continually moving social and political challenges are automated and packaged as mathematical and engineering problems. Simultaneously, research on algorithmic injustice shows how ML automates and perpetuates historical, often unjust and discriminatory, patterns. The negative consequences of algorithmic systems, especially on marginalized communities, have spurred work on algorithmic fairness. Still, most of this work is narrow in scope, focusing on fine-tuning specific models, making datasets more inclusive/representative, and “debiasing” datasets. Although such work can constitute part of the remedy, a fundamentally equitable path must examine the wider picture, such as unquestioned or intuitive assumptions in datasets, current and historical injustices, and power asymmetries.

As such, this work does not offer a list of implementable solutions towards a “fair” system, but rather is a call for scholars and practitioners to critically examine the field. It is taken for granted that ML and data science are fields that solve problems using data and algorithms. Thus, challenges are often formulated as problem/solution. One of the consequences of such discourse is that challenges that refuse such a problem/solution formulation, or those with no clear “solutions”, or approaches that primarily offer critical analysis are systematically discarded and perceived as out of the scope of these fields. This work hopes for a system-wide acceptance of critical work as an essential component of AI ethics, fairness, and justice.

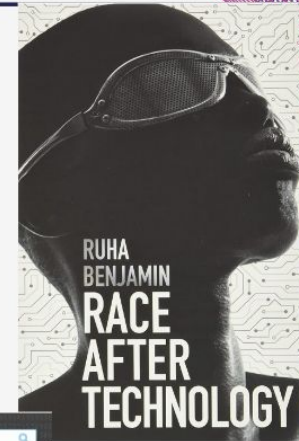
Concept: Basic principles of a new data science output observed and reported

why are black women so
why are black women so angry
why are black women so loud
why are black women so mean
why are black women so attractive
why are black women so lazy
why are black women so annoying
why are black women so confident
why are black women so sassy
why are black women so insecure

ALGORITHMS OF OPPRESSION

HOW SEARCH ENGINES
REINFORCE RACISM

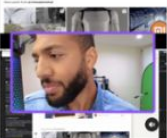
SAFIYA UMOJA NOBLE



FINAL PROJECT DESIGN

AI ETHICS FINAL PROJECT

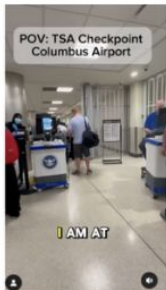
Fall/Winter 2024



donaleni AI generated videos: risks, safety, and awareness!



campaignforsafety Step into the heart of the movement. Join Joop Meenderink, of Pausa AI, in the vibrant streets of the Hague, Netherlands. Watch as their pioneering vision sets a path for AI safety. Every word and every step signifies progress toward change. #PausaAI #AISafety #AIethics #Technology



allunited Want to know what opting out looks like? Let Dr. Jose (josephdubois) show us how it's done! Watch her run through the TSA Checkpoint Checklist and say "no" to face scanning at the postsecondary. Fill out your own TSA screencard at tsa.aig.org

Within the past decade, technology companies have been rapidly deploying AI models that have led to technologies such as ChatGPT, Siri, Gemini, facial recognition, and social media algorithms. Recent advancements such as the development of complex model architectures, open-source models, and large data storage have propelled AI to be used in virtually every field, yet their social and environmental effects are made less known. **How do some of these AI models work? What are some of the advantages and harms of this rapid deployment, and who is being affected? And how might we help our community stay aware of AI so that they may engage with these technologies in a safe and socially-informed manner?**

In this Final Project, you will be working in pairs to research the ethical aspects of an AI topic of choice, survey how your community thinks about these technologies, and create an educational video reel based upon your data. The project will be divided in three phases:

Phase 1: Literature Review

In this phase, your group will identify 2-3 sources pertaining to your topic. You will review these sources and write a short summary of each (3 sentences) to develop an Annotated Bibliography. This will serve as your preliminary research.

Phase 2: Data Collection

Based on your literature review, your task will be to develop a survey to better understand how your community members understand this topic, and what questions or concerns they might have.

Phase 3: Data Analysis & Video

In the final phase, you will analyze your survey responses and develop an educational video reel. Your reel should include the following information in a creative, fun, and engaging way:

- 1) Introduce the topic/why it is important
- 2) Discuss findings from your literature review
- 3) Discuss findings from your survey results
- 4) Provide ways for community members to stay informed about AI in their own lives

You may choose from the following topics (either **application** or **field**-based), or you may choose a different topic of choice for approval:

- 1) **Application:** Large Language Models (LLMs) (ex: Chatbots like ChatGPT, text to video software like Gemini AI)
- 2) **Application:** Computer Vision (ex: Facial Recognition, Autonomous vehicles)
- 3) **Field:** AI and the Environment (climate change, vulnerable communities)
- 4) **Field:** AI and Social Media (TikTok, Instagram, Facebook, Twitter, Snapchat, etc)

Timeline:

- Week 1: Choose topic, Literature review
- Week 2: Literature review & Develop Survey
- Week 3: Data Collection/Analysis
- Week 4: Data Collection/Analysis
- Week 5: Plan out reel
- Week 6: Shoot and edit reel
- Week 7: Edit reel
- Week 8: Final presentations!

EARLY REFLECTIONS

Strengths

- Collaboration between class teacher, ABCS instructor, site director, and Netter staff
- Students engage with safety and ethical dilemmas of their everyday interactions with AI; these topics are relevant to students and have real-world impacts
- Through interactive activities such as debates as small discussion, students can engage in multifaceted ethical conundrums through tangible entry points (such as facial detection on their phones)
- Through the final project, students can engage these topics with their peers outside of the classroom.