Science for the People and the Truth School Present

CRITICAL TEACHING ABOUT TRUSTING THE SCIENCE

PLAN FOR THIS WORKSHOP

➔ Welcomes and Introductions (~4:00)

➔ Lightning Talks (~4:10)

- ◆ Why do we educate? How do we educate? (Theresa)
- ◆ What does it mean to trust the science? (Sigrid, Brian, Tatiana)
- ◆ Why do some people not trust the science? (Zavi, Rafael, Elise)
- ◆ Envisioning a science we could trust (Emma, Seth)

➔ Breakout Rooms (~4:50)

➔ Reports Back/Closing (~5:30)

INTRODUCTIONS

Science for the People

Theresa Austin
Rafael Burgos-Mirabal
Tatiana Cheeks
Erika Dawson-Head
Steven Fernandez
Zavi Fernandez
Emma Harnisch
Kimberley Medeiros
Elise Pierce
Adrienne Saums
Sigrid Schmalzer
Brian Schultz
Seth Tuler

Por qué enseñamos? Why do we educate?

Theresa Austin, UMass Amherst
Science for the People
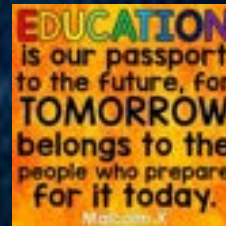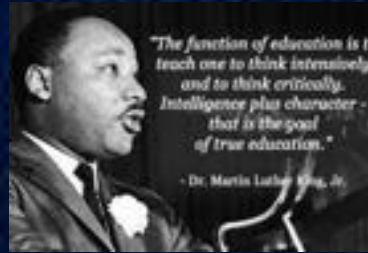
Cómo enseñamos? How do we educate?

Science for the People

A Social History of Truth

- **How people think about "truth"** and **who people trust** to define truth changes over time and in different communities.

- 17th-century England: People who founded modern science established idea that only *gentlemen* (elite white men) were trustworthy.
  - ➢ The idea of "trusting the science" <u>always</u> relates to specific social relationships (class, gender, race, etc.).

- Trust is a <u>social phenomenon</u>: we have different expectations about trust based on our experiences and identities in society.

Speakers who follow will talk about
- Why the ability to trust science is so important
- Why many people can't trust scientific authorities in our society
- What we have to do to make science more trustworthy

See Steven Shapin, A Social History of Truth: Civility and Science in Seventeenth-Century England (1994).

Of course science is imperfect, and needs to be democratized, decolonized, demystified, etc., and we need solidarity science and education too…

"Once the rockets are up, who cares where they come down. That's not my department," says Wernher von Braun   -Tom Lehrer
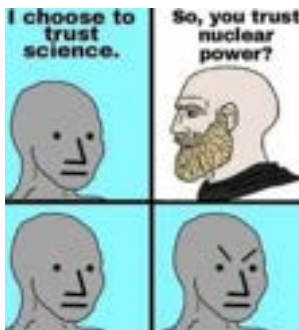
"Trust science" does not mean uncritically, but to value it for what it still does (cf. doctors and auto mechanics).

Its empirical nature, its actually conservative process (also abused, cf. "sound science" vs the precautionary principle), its infrastructure and its skill sets, mean that science is still our best bet for developing sustainable improvements in the environment, health, and etc., such as for currently hot topics like alternative energy and vaccines.

Facts do not cease to exist because they are ignored.
- Aldous Huxley -

And of course science progresses, a good thing, not dogma clinging to outdated information.

THE GOOD THING ABOUT SCIENCE IS THAT IT'S TRUE WHETHER OR NOT YOU BELIEVE IN IT
-NEIL DEGRASSE TYSON-

"Trust me, I'm a doctor…"

...and smallpox!

The Mold Lady's Story:
"I want science on my side"

Legacies of Oppression & Ongoing Oppression in Medical Science

Medical Testing and Medical Abuse of Incarcerated People

*Exemption to Consent for Treatments Considered "Safe"

Informed Consent*

Acquiescence to Advice from a Doctor

Conflict of Interests
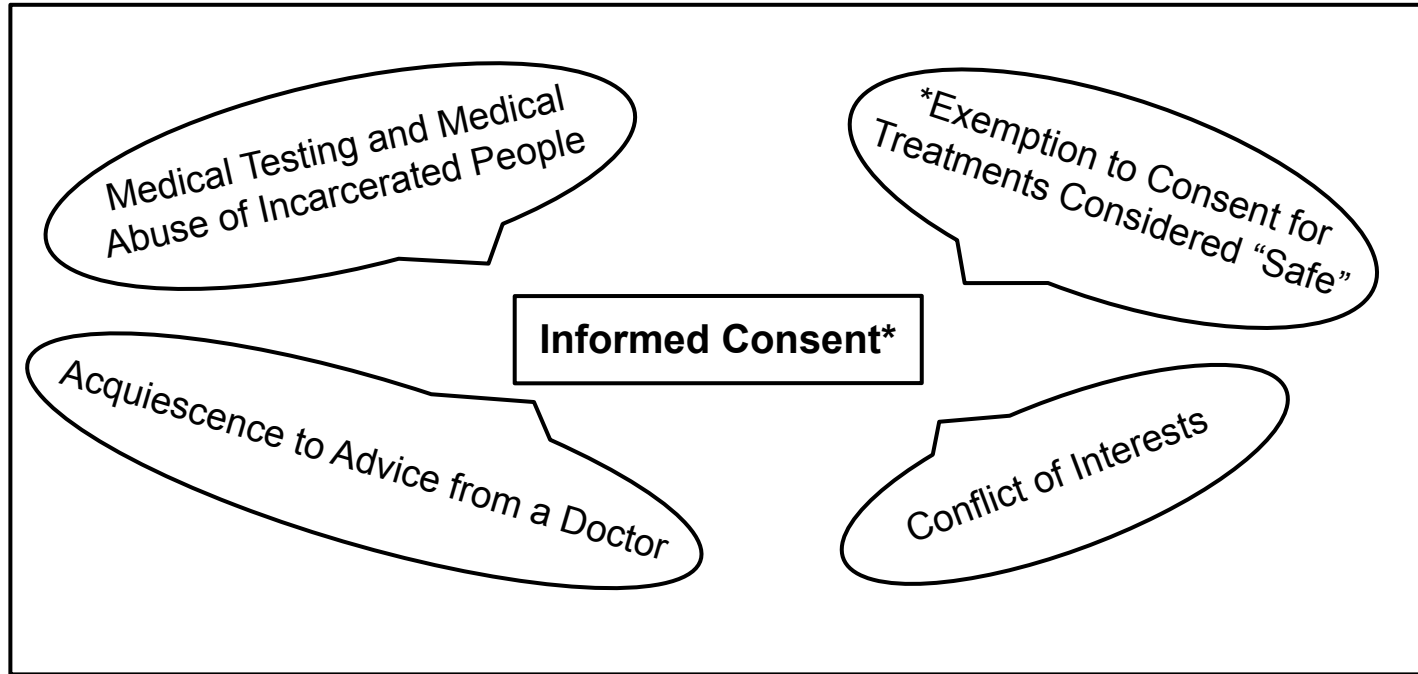
US Government (Today)
Are protections enough?

"Invisible" interests made visible. Unvoiced interests organized to be voiced

The invisibility of how we are tied up by others' interests

← The truth about many of the default trusts: the *invisible hand* of interests

One way toward broadening the array of "scientific" interests: making the default interests visible to be able to interrogate/temper those, and have **others** enter the "interests"

conversation ⟶

A reeducation that unties us in communities to engage in participatory science

Manufactured Doubt

- exploitation of scientific uncertainty by industry

Famous Instances

Tobacco Industry

Climate Change -
Marshall Institute

Atrazine

Tactics to manufacture doubt

- Attack study design
- Gain support from reputable individuals
- Misrepresentation of data/ information
- Use hyperbolic language
- Influence laws and government agencies

Envisioning a Science Worth Trusting: Building Foundations in K12 Spaces

Envisioning a Science Worth Trusting: Building Foundations in K12 Spaces

---

Classroom Practice:

Notice → build observation & **listening** skills; identify new perspectives
Wonder → build **curiosity**; empower to think **critically**
Know → build **context** & **agency**; empower by including community knowledge

This pedagogical framework is modelled after Akiea 'Ki' Gross's "Woke Wonderings" see their newest lesson plan in "Lessons in Liberation" from AK Press!


Principles in my STEMM classrooms:

* Context * Questions * Growth * Empowerment *
* Critical thinking * Joy * Curiosity *

What principles guide your science teaching? What principles guided your own science education?

Envisioning a science we can trust

So many reasons not to trust...

- Science and "pseudo science" are used to manipulate, oppress, and manufacture doubt
- Scientists often answer narrowly defined questions
- Scientists get things wrong, and knowledge changes
- Science is complex and often counter-intuitive
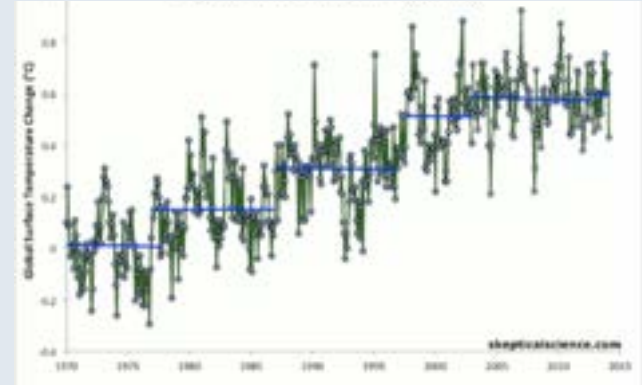
But science can also empower, enlighten, and inform

Teach / learn skills for critical interpretation of science and listening

Build awareness of how we think well and not so well

Change institutions and power dynamics

- Set up systems for independent assessments
- Build relationships for collaborative science, co-creation, co-learning
- Create and participate in solidarity science efforts

What are opportunities to do these with our students and neighbors?

Breakout Rooms

You will soon be assigned to a breakout room.

In case of high attendance, you may not have an assigned facilitator. In that case, someone in your group should identify a facilitator who can keep the group on track and make sure everyone has a chance to speak.

Take a few minutes for introductions: each person should share their name, pronouns (if desired), and **very briefly** what brought them to the workshop.

Someone from the group should volunteer to take notes in the Google Form that will be circulated in the Chat.

Breakout Questions

1. How does what you heard in the Lightning Talks help you reflect in new ways on your science teaching and/or your own science education?

2. How can we move away from simple endorsements to 'trust the science,' instead focusing on critical teaching about what it means to 'trust,' why many people don't trust the scientific establishment, and what would make scientific institutions more trustworthy? What kinds of activities would help students explore these questions?