

Activity Summary Table Blurb

What We Did	How We Did It	Why We Did It
<p>[Breakout Group #1] Building a Critical Community Asking students to critically engage with issues of equity and justice means analyzing their own identity, the identities of those in power, and how to meaningfully ensure that all voices are heard and represented by those in power. Critical communities foster brave discourse that empowers all participants to “do the work” of advocating for justice.</p> <p>In developing a critical community, the central question students grapple with is as follows: <i>How can we identify power injustices around us, and what action(s) can we take to right those wrongs?</i></p>	<ul style="list-style-type: none"> ● Identity Mapping: Promoting students to analyze how their identities intersect encourages them to do the same with science. Scientists give voice to the political, social, and cultural values of the time; it is important to analyze <i>who</i> is behind those voices! ● Anchoring Phenomena: Introduce the anchoring phenomena of a unit through the lens of equity and justice, accounting for individual differences in experience and opinion. Encourage students to ask questions focused on the content as well as analyzing issues of equity and justice. ● Community-Facing Performance Tasks: Empower students to adapt a critical and forward-thinking lens when creating checks for understanding. What action(s) can be taken to address issues of inequity? 	<ul style="list-style-type: none"> ● Informs Practice: Building critical communities provides context for what we do in the classroom and provides a lens through which students can analyze learning throughout the year. ● Attention to Equity: In the current social-political climate, modeling hard conversations about issues of identity prepares our students to have these same conversations beyond our time together. ● “Showing Up”: Developing empathy is a large focus of many Social-Emotional Learning (SEL) goals; better understanding who is in the room allows members of the classroom unit to relate and work more effectively together. ● Increased Achievement: Simply put, students perform better and are more engaged in science classrooms that foster critical consciousness.

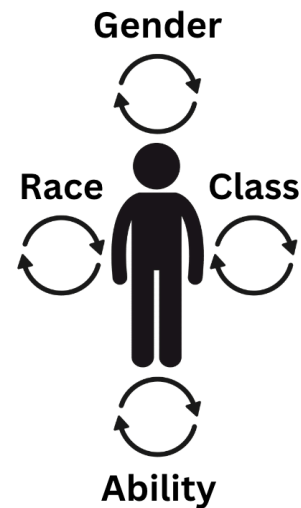
Breakout Group #1: Building a Critical Community

What is a critical community?

A critical community empowers all participants as advocates to address issues of equity and justice.

Critical communities analyze the political, social, and cultural values that produce science and pushes students to ask and answer questions such as:

- Whose voices are **represented** by those in power, and whose voices are **left out** of the conversation?
- How does adapting a perspective from a different identity marker **change** the way we view an issue?
- How can we elevate our individual skills to **advocate** for change toward a more just society?



How do you build a critical community?

Building a critical community means asking students to analyze their own identities and values and evaluate the extent to which those support systemic issues of equity. This can come in the form of:

- **Identity Mapping:** Ask students to identify the identities with which they associate.
How do these identities shape/inform the beliefs and values you hold about yourself and the world?
- **Anchoring Phenomena:** Explore scientific phenomena through a justice-oriented lens.
What political, social, economic, and/or cultural beliefs shape the way we approach scientific issues?
- **Community-Facing Performance Tasks (CFPTs):** Position students as agents of change to address systemic issues of equity.
How can we use science we've learned to take action(s) that address issues of equity in our community (or more broadly)?

Why should you build a critical community?

- **Infirms Practice:** Establishing critical communities gives purpose to the science we learn as a classroom unit.
- **Attention to Equity:** Modeling conversations about issues of equity and justice informs future “hard conversations” about other political, social, economic, and/or cultural differences in belief systems.
- **“Showing Up”:** Understanding “who is in the room” creates a deeper sense of connection and empathy between all individuals.
- **Increased Achievement:** Research supports the finding that students who develop a critical consciousness have higher levels of academic achievement and engagement as well as higher enrollment in higher education.

LEAD PSA

LEAD PAINT AND HOW RESIDENTS CAN TAKE ACTION.

WHAT IS LEAD EXACTLY?

LEAD IS A CHEMICAL ELEMENT WITH THE SYMBOL **Pb** AND ATOMIC NUMBER 82. IT IS VERY HARMFUL TO PEOPLE, ESPECIALLY KIDS. THEY CAN AFFECT KIDS BECAUSE KIDS CAN INHALE THE LEAD AND THAT LEAD WOULD TRAVEL THROUGH THE BODY AND IT AFFECTS THEM A LOT BECAUSE THESE ARE KIDS. KIDS ARE STILL DEVELOPING SO THE FACT THAT IT'S AFFECTING THEIR DEVELOPMENT IS VERY HARMFUL.

THE ATOMIC MASS OF LEAD IS 207.2 AND IT REPRESENTS THE SUM OF THE NUMBER OF PROTONS AND NEUTRONS. THE ATOMIC NUMBER OF THE LEAD IS 82 AND IT REPRESENTS THE NUMBER OF PROTONS IN THE NUCLEUS OF EACH ATOM OF THAT ELEMENT. METALS ARE LEAD A "HEAVY METAL" COMPARED TO OTHER METALS IS THAT THEY ARE ON THE RIGHT SIDE OF THE TABLE AND WHEN THE TABLE IS GOING LEFT TO RIGHT ITS ATOMIC RADIUS INCREASES, AND LEAD (Pb) IS IN GROUP 14 ON THE PERIODIC TABLE.

COMPARED TO OTHER ELEMENTS LIKE MAGNESIUM (Mg) FOR EXAMPLE, Mg HAS AN ATOMIC NUMBER OF 12 WITH A MASS OF 24.305 AND AN ATOMIC RADIUS OF 161. Mg IS ALSO IN GROUP 2 IN THE TABLE. NEUTRAL Mg HAS A FEW VALENCE ELECTRONS AND LOW EFFECTIVE NUCLEAR CHARGES. THIS SHOWS HOW SMALL IT IS COMPARED TO LEAD AND LET US NOT FORGET Mg HELPS MUSCLE GROWTH IT IS REQUIRED FOR ENERGY PRODUCTION AND BLOOD PRESSURE REGULATION AS WELL AS FOR OTHER USEFUL STUFF IN OUR BODY.

LEAD CAN AFFECT THE BODY BY DECREASING BONE MUSCLE GROWTH. IT WON'T BE ABLE TO FILL IN THE SPACES BETWEEN PROTEINS AND MAKE THE BONE STRONG. IT REPLACES THE CALCIUM JOB.

Brain
Behavior problems
lower IQ, hearing loss, learning disabilities

Body
Decreased bone and muscle growth

LEAD CAN AFFECT THE BRAIN BECAUSE NOT ONLY WILL IT CAUSE THE PERSON TO HAVE LOWER IQ, HEARING LOSS, AND LEARNING DISABILITIES, BUT IT CAN ALSO STOP DNA GROWTH AND STOP ITS CONNECTION WITH PROTEINS.

SO WHAT CAN WE DO??

A WAY RESIDENTS CAN PREVENT HARM FROM LEAD PAINT IS PROBABLY TO SCRUB IT OFF AND OF COURSE, USE PROTECTION SO THAT THE LEAD DOESN'T GO ON THE PERSON. ALSO WHEN PAINTING OVER WHERE LEAD WAS BEFORE MAKE SURE TO USE SOMETHING THAT DOESN'T CONTAIN LEAD. LIKE USING A TESTING KIT TO SEE IF THE PAINT CONTAINS LEAD. ANOTHER WAY IS ALSO CLEANING THE PLACE A REGULAR MAINTENANCE IN THE HOUSE TO KEEP SURFACES IN GOOD CONDITION ESPECIALLY AREAS THAT ARE ACCESSIBLE FOR CHILDREN SO THEY DON'T HARM OR GET ANY INFECTION. ALSO, RENOVATIONS CAN WORK FOR RENOVATING OR REMODELING YOUR HOME, AND MAKING SURE TO TELL THE PERSON THAT YOU HIRED TO USE LEAD-FREE MATERIALS ON YOUR HOME.

LINK: [HTTPS://WWW.NYC.GOV/SITE/HPD/SERVICES-AND- INFORMATION/LEAD-HAZARD-REDUCTION-AND-HEALTHY-HOMES- PROGRAM/PAGE](https://www.nyc.gov/site/hpd/services-and-information/lead-hazard-reduction-and-healthy-homes-program/page)

Example 1: PSA for Lead in Paint

NYC is notorious for stories about lead paint in housing buildings; despite its ban in the 1960s, apartments and schools in our community have tested positive for lead paint as recently as the 2020s. In this project, students focused on creating a PSA to inform community members about how to test for lead as well as the negative effects of lead poisoning. Students used information they learned through a Chemistry unit on Atoms and the Periodic Table to create a PSA about the properties of lead and how residents of NYC can test their apartments for lead paint.

- Students anchored the unit in a story about a woman from low-income housing around our community whose daughter was affected by lead poisoning from the paint in their apartment. She sued NYCHA and won a multi-million dollar lawsuit.
- Students created a PSA document that was flyered and posted around the school building as well as to take home to post around their buildings. Some community members actually used the information in student flyers to schedule a free consultation.

Example 2: COVID-19 Circle Conversations

Developing a critical consciousness means not only discussing issues of equity and justice – it means implementing practices that help students deconstruct power structures and elevate equity in voice. Through a culture-setting unit at the start of the year, teachers implemented a series of circle conversations to discuss the disproportionate effects of COVID-19 on urban communities as well as how students could take action to effectively prevent the spread. In these circle conversations:

- Positioning all participants in a circle removed the visual of a “leader” in the discussion – all participants were present, seen, and represented.
- Discussing the disproportionate number of urban communities with severe or lethal effects of COVID-19 meant students grappled with real community-facing issues. Adopting a critical consciousness offered students the opportunity to name and challenge the oppression they faced.
- Providing opportunities for students to “do good” and combat injustice (“right the wrongs”) allowed students to adopt an action-oriented approach. *What can I do about this right now rather than believing I have no control over the situation?*