

Activity Summary Table

What We Did	How We Did It	Why We Did It
<p>[Breakout #1] Identity Mapping Students represent their own identities through an open-ended identity mapping activity. Students are encouraged to include any aspect of their life, culture, personality and/or priorities that they think are an important part of their identity. Students then are introduced to diverse scientists and identify how these scientists involve their identity in the science they do. Class closes with the creation of a whole-class identity map and a "science in my life" survey.</p>	<ul style="list-style-type: none"> ● Individual Identity Map: Who are you? What people, places, languages, cultures and priorities shape who you are? ● Scientist Identity Maps: What can we learn from diverse scientists about bringing our whole selves to the science we do in this class? ● Whole-Class Identity Map: What do we each bring to this community of scientists that we can draw on as we work as a team? ● Science In My Life Survey: How has science impacted your life? What environmental, health, or other science-related topics impact you or your community? 	<ul style="list-style-type: none"> ● Meaningfully getting to know students: Creating a justice-centered, empowering science classroom begins by understanding your students. ● Challenging notions of "who does science": Learning about modern diverse scientists who study phenomena important to their identity and communities. ● Prioritizing classroom belonging: Intentional recognition that everyone is a generative member of our scientific community. ● Assessing student curiosities and scientific priorities: Collecting information that can be used throughout the year to keep science class relevant and meaningful.
<p>[Breakout #2] Localized Anchoring Phenomenon: Students are introduced to a local data set related to a shared experience- the COVID-19 pandemic. They make noticings and wonderings about the anonymized data then it is revealed that they know (and even live in!) the communities. They then develop a public question board to drive further investigations.</p>	<ul style="list-style-type: none"> ● Introducing the Anchoring Phenomenon: The COVID-19 pandemic is experienced differently by different people and communities, why? ● Analyzing Local Data: What similarities and differences are there among communities? Why might that be? ● Creating a Driving Question Board: What investigable questions can we make public? 	<ul style="list-style-type: none"> ● Planning for a purpose: Students draw on their own experiences to access science and envision change. ● Examining the intersections between science and social inequities: Students engage in making observations about relevant and localized data to begin to examine intersecting systems of oppression. ● Creating routines to return to: Students are asked to think about why and how we do science.
<p>[Breakout #3] Modeling Phenomena in Context: All students represent their thinking and current understanding of the phenomena through labeled drawings and written text. Our model for the culture-setting unit asks students to discuss the role that in/equity plays in our phenomenon, in addition to the scientific explanation. Student models are revised several times throughout the unit as they figure out more about the anchoring phenomenon.</p>	<ul style="list-style-type: none"> ● Initial Model: What prior experiences and knowledge do we bring to the table? ● Model Consensus: What do we all agree should be in our model? Are there drawing conventions we can all agree on? ● Gotta-Have Checklist: What are the core components our model needs to make sense of our phenomenon? ● Model Revisions: How has our thinking changed based on what we have figured out so far? 	<ul style="list-style-type: none"> ● Showcase student sensemaking: Students represent their thinking with text and drawings in a language and format that makes sense to them. ● Science in context: Scientific decision-making is embedded in complicated socio-political contexts. ● Hear all voices: All student ideas matter and are valued through consensus. ● Nurture revision as a good and necessary practice: Emphasis is on the development of understanding, not on a single correct answer. Students will revise their models to show changes in thinking over time.
<p>[Breakout #4] Experiment Design: Stemming from questions curated on a driving question board, students identified testable questions, designed and carried out experiments, analyzed data, and shared their findings.</p>	<ul style="list-style-type: none"> ● Testable vs. Groundwork Questions: What is a testable question? ● Experiment Design: How do we answer our questions through experiments? ● Sharing information: What can others learn from my study, and what can I learn from others'? 	<ul style="list-style-type: none"> ● We can all do science: Honoring student curiosity and questions with scientific experimentation. ● Modeling Scientific Practices: Students experience how science is performed.
<p>[Breakout #5] Community Connections: Students co-constructed FAQ sheets using credible information from experiences in class, medical mentors, and peer-reviewed online research. We printed the FAQs for students to post around school and to bring home to their communities.</p>	<ul style="list-style-type: none"> ● Mythbusters: How do we locate trustworthy information? ● Medical Mentors: What are other experts saying, and how do we "pull them in" to have conversations with us? ● Peer Review: In what way(s) does my information resonate with my community? ● FAQ Sheet: How do I communicate what I learned to and for people I care about? 	<ul style="list-style-type: none"> ● Empowering Students: Students advocate for issues that matter to them and to the global community! ● Honor Community Expertise: Students engage with diverse perspectives and honor community contributions! ● Data-Driven: Replacing 8 unit tests with authentic assessments increased students passing statewide assessments by 12.2%!

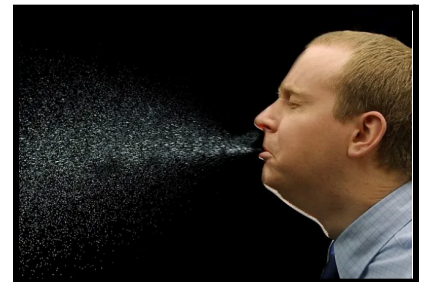
Breakout Room # 4: Student-led Experiment Design

- **Intention:**

1. Student empowerment by honoring the questions they have and giving them the time and space to test them scientifically.
2. Students' diverse sensemaking strategies are visible to peers and teachers as well as honored.
 - a. **STEM Tool 31: This is an opportunity to intentionally build on student interest and expertise, to help make these experiences meaningful!**
3. Authentic practice of science.
4. Fostering community through the sharing of results and the discussions they inspire.
5. Setting a culture and routine of experiment design to return to throughout the year.

- **Steps to guiding students through experiment design:**

1. Students experience something (look at authentic data, observe a phenomenon).
 - a. Students generate noticings and wonderings. Wonderings are captured on a Driving Question Board.
 - b. Choose something included on the Driving Question Board.
 - c. **STEM Tool 15: This is an opportunity to promote equity by listening to all students, and to make science accessible to all!**
2. Brainstorm questions about the data or phenomenon.
 - a. Ask each student to come up with at least 3 questions.
3. Identify testable questions (may be answered through measurement/experimentation).
 - a. Students will settle upon one question to answer.
4. Identify materials needed to carry out the experiment.
 - a. Provide students with a list of the materials available in your classroom.
 - b. This will help the students to focus their questions and know what is possible.
5. Determine the variables of the experiment.
6. Create an initial model/hypothesis/prediction of what they think will happen and why.
7. Write a detailed procedure.
8. Carry out the experiment and collect data.
9. Create a revised model of the results of the experiment.
10. Share the newly learned information with others in the classroom, school, community.



- **Challenges:**

1. Presenting an experience to the students that is engaging and interesting, but also focused enough to help the students ask testable questions.
2. Crafting a student-led experiment that is appropriate in scope (for your space, materials, the content you are teaching).

- **Ideas for your classroom:**

1. What experiments or investigations do you already do in your classroom that could be adapted to this method?