Activity Summary Table

What We Did	How We Did It	Why We Did It
[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.	• **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?	• **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.
[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.	• **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?	• **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.
[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.	• **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?	• **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.
[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 finidngs.	• **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'?	• **We can all do science:** Honoring student curiosity and questions with scientific experimentation. • **Modeling Scientific Practices**: Students experience how science is performed.
[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.	• **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?	• **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%!

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Breakout Room # 2: Localized Anchoring Phenomenon

- **Introducing the Anchoring Phenomenon:** The COVID-19 pandemic is experienced differently by different people and communities, why?
- **STEM tool 67: This is an opportunity to focus early on centering justice through phenomenon!**

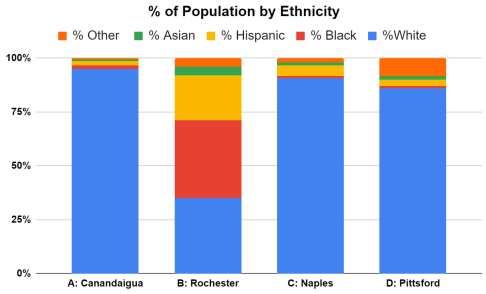
1. *Analyze unnamed data* from 4 communities. Notice similarities and differences; ask questions to help understand more deeply.

Table 1: Covid Population Data for 4 communities in Upstate NY

	Population (counted in 2010 Census)	% of population with COVID cases	Number of COVID-related deaths
Community A	20,565	0.48%	35 (county)
Community B	210,452	1.04%	295 (county)
Community C	2,502	0.20%	35 (county)
Community D	31,426	0.30%	295 (county)

2. *Introduce new perspectives* about COVID-19 disproportionately affecting people of color. We offered options to watch a national news video, listen to a local health commissioner, or read the same interview with the health commissioner.
3. *Analyze local, named data* alongside population ethnicity data. Students are given space to make observations and inferences about data while also sharing their experiences during the pandemic.

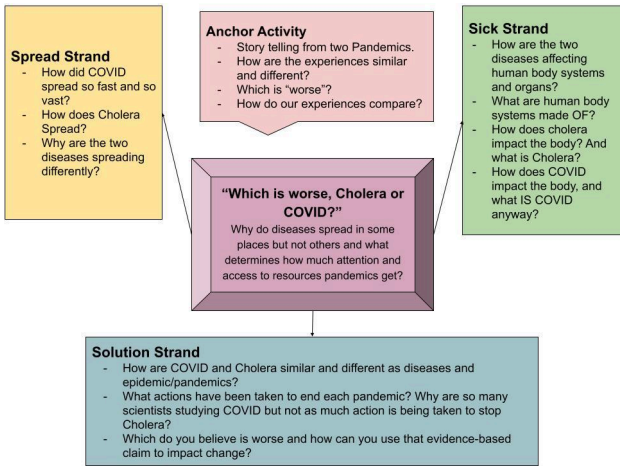
	Median Household Income	% of Households in Poverty
Community A- Canandaigua	$49,198	14.7%
Community B - Rochester	$33,399	33.1%
Community C - Naples	$41,136	19.1%
Community D- Pittsford	$116,716	3.1%



4. *Students make initial claims* and predictions about how and why communities have experienced the pandemic differently.

- **Creating a Driving Question Board:** What investigable questions can we make public?
  1. *Students independently record questions* related to the anchoring phenomenon. It may help students to see/hear a few examples and to have some question starters (Why… How… How would it be different if… What causes/d…)
  2. *Students engage in a routine for creating a question board*. Share one at a time and build upon each others' questions.
  3. *Make questions public.* Display them on a board/chart paper/ Jamboard that students can return to at some point during following lessons. Their questions drive the learning.

- **Phenomenal Extensions:**
  - Chemistry: Why do vaccines need to be kept so cold (-70 degrees Celsius)? What happens to the vaccine to make it expire? Students examine the systems that need to be in place to keep the vaccines cold, and what happens to the vaccine chemically as it is thawed and then as it expires.
  - Middle School Life Science: Why do diseases spread in some places but not others and what determines how much attention and access to resources pandemics get? Students examine stories from the COVID-19 (globally, but focused on their own experiences) and Cholera (in Yemen) pandemics.



- **Challenges**:
  - Examining intersections between science and inequities: balancing the elevation of students' experiences while combating racism and stereotyping learned at home
  - Time constraints: There is a significant time investment in finding relevant, local, and impactful data and developing an anchoring phenomenon that draws on and problematizes student experience.

- **Ideas for your classroom:**
  - What shared experiences do your students have?
  - What problems does the community in which you teach face?
  - What ties are there between science and social inequity?

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