FACILITATING STUDENT SOCIAL JUSTICE CONVERSATIONS THROUGH SCIENCE

NATIONAL SCIENCE TEACHING ASSOCIATION
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OUTCOMES

Create Culturally Responsive Phenomena
Learn to connect the NGSS to a science phenomenon focused on social justice and culturally responsive to our student populations.

Argue From Evidence in Elementary
Use the science and engineering practice of arguing from evidence to facilitate student conversations on socially just science topics.

Cultivate a Socially Just Classroom Community
Practice tools to facilitate difficult conversations around race, culture, identity and social justice in the elementary classroom.
ABOUT YOUR FACILITATORS

- Former Math and Science Teacher
- Instructional Coach, County Administrator
- UC Berkeley Teacher Education Lecturer
- Founder, STEM4Real
- Master of Arts in Labor Studies
- Next Gen Navigator Author and Contributor
- Elementary Educator, Hawaii Public Schools
- Elementary Science Specialist, NYC DOE
INTRODUCTIONS

• Say your name
• Where you’re from
• If you were a molecule, what would you be? Why?
WHICH WATER WOULD YOU CHOOSE TO DRINK?

A B

NEED MORE INFORMATION
Student Responses:

I would drink B because A has dirt and rocks in it but I also think that I would drink A because you might be tricking me so I would pick either B because A is the more messy and disgusting water

I would drink B because A would get me sick because it is dirty.

I would rather drink B because it is not dirty and it is healthy water.

A looks so bad it has poopy water so I'm team B
NOW WHICH WATER WOULD YOU CHOOSE TO DRINK?

NEED MORE INFORMATION
Student Responses:

i think i would drink A because B looks kind of yellow

I'd rather pick B because I feel like it has the little things that make the water better

A and B their mostly the same because A is water and B is clean water so both

A because my guts say so

I will drink b because it looks a lot more cleaner
Set the stage to create opportunities for academic discourse with ENGAGE.

Give our students something to talk about with real-life situations (Flint Water Crisis)

Create culturally responsive phenomena to HOOK our students.
DO-KNOW-THINK FRAMEWORK

DO

KNOW

THINK

“what students know”

“what students do”

“how students think”

Achieve
PHENOMENON: THE WHY

DO

KNOW

THINK

ENVIRONMENT

SOCIAL EMOTIONAL

ACADEMIC DISCOURSE

ENGLISH LANGUAGE DEVELOPMENT

CULTURALLY RESPONSIVE TEACHING
WHAT IS A PHENOMENON?

“A puzzling event or process that sparks explanatory questions” that students are able to make sense of using the concepts and skills learned during instruction. (Brian Reiser) Must be observable, something that students can see or experience.
What are some phenomena examples you can think of right now that combine science and society?

- Drives do-know-think learning
- Creates the context and need for further inquiry
- Requires student learning to “figure out” vs “learn about”
- Leads to questioning
Science Standard

- What content are you teaching?
- What grade level?
- SEP---DCI---CCC
- Support an argument that animals get the materials they need for growth chiefly from air and water. 5-LS1-1
What will ignite curiosity and questions from your students?
Is it interesting?
Will students ASK questions?
Pose the (unjust) situation to the students
Have them generate questions and observations.
What societal issue would need science to understand? Through understanding, students can frame their arguments.

How to choose a phenomenon that ignites curiosity and has societal implications.

- Read the news and keep up with current events
- Research issues that affect communities of color and lower socioeconomic communities

Is there real-world relevance?
SOCIETY: CREATING A LOCAL CONTEXT

The New York Water Crisis That Nobody's Talking About

New York Sets Drinking Water Safeguards

Governor Cuomo Announces First in the Nation Drinking Water Standard for Emerging Contaminant 1,4-Dioxane
IS ELEMENTARY TOO YOUNG?

ELEMENTARY ELA + SCIENCE SENTENCE STEMS

- I agree/disagree_____,
  because_____.
  ◦ (argumentation)
- I observed______.
  ◦ (connecting to the real world)
- I think_______, because______.
  ◦ (claims and evidence)
- I wonder______.
  ◦ (engagement and relevance)
1. Open your eyes to all skin colors
2. Use your words to talk about race
3. Point at policies as the problem, not people
4. Shout, “There’s nothing wrong with the people!”
5. Celebrate all our differences
6. Knock down the stack of cultural blocks
7. Confess when being racist
8. Grow to be an antiracist
9. Believe we shall overcome racism
1. “When I opened my eyes to all skin colors, I noticed that ______ people were more/less affected by____________ compared with ______ people because _____.”

2. “When I hear people talk about race I feel________________.”

3. “When the government blames _______________ on the people, I say________________.”

4. “Blaming ______________ exposes evidence like________________.”

5. “_______ should be celebrated because ______________.”

6. This person or event helped others grow by________________.”

7. “I thought that this person would __________ but they____________.”

8. I talk about race because________________.”

9. “Today, I did ______________ to help other people that are different than me.”
CREATE AN ARGUMENTATION PROMPT

Should everyone have access to clean water?
Yes everyone should have clean water because if not they can get sick and go to the hospital and then if they're poor they can't pay the doctor so yes they should always get clean water.

Yes because if more people drink dirty water there gonna get sick and it's gonna spread.

People should have clean water because we basically need clean water to live and if we don't have that we can die.

YEA BECAUSE NOBODY WANTS TO WASH DISHES WITH DIRTY WATER AND A BATH.

People should have clean water because we basically need clean water to live and if we don’t have that we can die.
Choose a phenomenon that ignites curiosity and has societal implications using the Standard-Hook-Society Method.

Pose the (unjust) situation to the students and have them come up with questions and observations.

Brainstorm activities that allow for students to generate evidence that can ultimately support their arguments.

Create a prompt that brings your learning sequence together, ignites discussion. Anticipate student responses!

<table>
<thead>
<tr>
<th>Phenomenon</th>
<th>Questions/Observations</th>
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<tbody>
<tr>
<td>Social Justice Culture</td>
<td>Craft norms for your classroom and use sentence stems to help students make claims based on evidence and facts</td>
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Argue!
RESOURCES

• Building an Anti-Racist Science Classroom
  https://www.nsta.org/blog/building-anti-racist-science-classroom

• NSTA Progression on Arguing from Evidence
  https://ngss.nsta.org/Practices.aspx?id=7

• STEM4Real Lesson Planning Resources
  https://stem4real.org/

• There's Something in the Water
  https://www.amazon.com/Theres-Something-Water-STEM-Real/dp/0999453106

• Anti-Racist Baby, by Ibram Kendi
  https://www.barnesandnoble.com/w/antiracist-baby-ibram-x-kendi/1133864927
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