Integrating Energy, Equity, and Place
in High School Physics

Readings in energy and equity

Day 4 | Thu Jul 27, 2023 | 12-2 PT / 3-5 ET

Agenda

Purpose of this session

- **To engage with scholarly literature addressing energy teaching and learning, equity in science, and equity in education**

Four short reading/discussion sessions

Instructions:

1. Sign up for Perusall.com, a free social reading platform that we think is terrific.
    - Use the code SCHERR-LNKK4 to access our course.
    - Within each article, you can comment on specific text, and we can see and respond to one another's comments.
2. This session will consist of four 25-minute sessions, each reading/discussing a different article.
    - New groups! Introduce yourselves by sharing your name, location, and a **favorite scent.**
    - For each article, spend:
        i. 15 minutes reading and making notes on each article
        ii. 10 minutes discussing the article with your group
    - Time cues will be sent as breakout room messages
    - Short break in the middle
    - Notes are comments on the articles themselves - no extra notes here.

	FIRST ARTICLE: 12:10-12:35 / 3:10-3:35	**SECOND ARTICLE:** 12:35-1:00 / 3:35-4:00	**THIRD ARTICLE:** 1:10-1:35 / 4:10-4:35	**FOURTH ARTICLE:** 1:35-1:55 / 4:35-4:55
Room 1: Heena, Jack, Deborah, Golsin	Gutierrez, "Framing Equity: Helping students 'play the game' and 'change the game'"	Harding, "Is Science Multicultural?" (only Question 3, "Is modern science culturally 'Western'?")	Jewett, "Energy and the Confused Student IV: A Global Approach"	Scherr et al, "Energy Tracking Diagrams"
Room 2: Jaime/Rachel, Kevin, Erin, Rebecca	Scherr et al, "Energy Tracking Diagrams"	Gutierrez, "Framing Equity: Helping students 'play the game' and 'change the game'"	Harding, "Is Science Multicultural?" (only Question 3, "Is modern science culturally 'Western'?")	Jewett, "Energy and the Confused Student IV: A Global Approach"
Room 3: Nora, Diane, Daniel, Ellie	Jewett, "Energy and the Confused Student IV: A Global Approach"	Scherr et al, "Energy Tracking Diagrams"	Gutierrez, "Framing Equity: Helping students 'play the game' and 'change the game'"	Harding, "Is Science Multicultural?" (only Question 3, "Is modern science culturally 'Western'?")
Room 4: Jim, Sabrina, Mike, Megan	Harding, "Is Science Multicultural?" (only Question 3, "Is modern	Jewett, "Energy and the Confused Student IV: A Global Approach"	Scherr et al, "Energy Tracking Diagrams"	Gutierrez, "Framing Equity: Helping students

	science culturally ‘Western’?”)				'play the game' and 'change the game'"

Pause and reflect

This is your 5 minutes to gather your thoughts about what you have learned and what you want to take away from today’s sessions. Please choose a box below and spend a few minutes writing for yourself.

- **Positionality stories**
- **Articles you read**

Name	**What are your takeaways from today’s sessions?**
Diane	I definitely felt more like a student - or able to empathize with students - today as I struggled with writing a 3-4 sentence positionality statement and then felt “slow” compared to my peers as I read the articles and annotated. I think I only managed to finish reading one of the four and skimmed the rest after the time ended. I appreciate learning about different resources through this workshop, like the Story Behind the Science site. I used Perusall at the beginning of the pandemic to share readings and have my students annotate, so it was interesting to experience it from their perspective and think about how it can kind of feel like you’re the last one to post an original response to a discussion board prompt. I definitely gained from being able to read the comments of my peers to see what stuck out to them or how it related to their situation.
Deborah Armstrong	Loved the software (app) we used to read and comment on the articles. It makes reading an article interactive with commenting. Will definitely use that next year but have questions like cost? Articles? As for the morning, I am more of a conservative person and do not share a lot about myself unless directly asked by a student so that was little more uncomfortable for me. I liked and downloaded all of the Physics articles I found on the Story website.
Ellie Brooks	I definitely struggled a little bit with the positionality stories. I usually try to relate to my students and tell them stories that are light-hearted or silly (and usually embarrassing for myself). I think I got it in the end, but it’s definitely something I want to keep working on. I liked the different articles we read and how they all did a great job of blending what we have been talking about this week. Nora made a comment that really stuck out to me about white people claiming they have no culture, but that’s because it’s the dominant culture. That completely changed my thinking around cultures in general.
Jack Gray	I feel that I need to work on coming up with a positionality story. I was confused by exactly what was expected and how to present it. I liked the first article our group went over (Guiterrez). It made the most sense and was written in a very engaging way. It really was easy to see how the interplay between the four domains introduced matter.
Sabrina Whitaker	The different articles offered a lot of different perspectives to think about. I had not considered how parents might think of empowering their students and how they thought it might affect their achievement. I find that I have included some positionality stories, at least baby ones. The students are usually very interested in those stories and engage the most when I tell them, which has always surprised me (what? I’m not really that interesting, oh you think so actually?). I need to work on creating them for more topics and possibly in a more intentional way.
Erin	Writing our positionality story was definitely hard. I do want to explore the Story Behind the Science website a little more. We don’t have a textbook for my class and we struggle to bring in meaningful readings for students that are at an appropriate reading level. This might be a good option for us to get in more reading and also to hook students on more of the science.
Megan	Lots to digest today. I am eager to add the energy tracking diagrams to my bar and pie charts. I felt the energy article by Jewett might be a bit complicated for people new to a systems/catergorization approach to energy. I liked the problems a lot, but they are challenging for sure. I would like to discuss the framing equity one more. I would like to see how positionality fits in there.

	Something tells me you are planning to do that. I also loved the article looking at science as a western invention. It is a dense and really thought provoking set of ideas. Need to re-read it!
Kevin	I found the various articles quite interesting. Each one is different from the other. Some will require me to go back and reread (e.g.Harding) and others felt more like affirmation (Jewett). I was happy to learn Perusall… I will be sharing this with my colleagues. The exercise of slow reading was helpful, although at first I wasn't sure what was being defined, positionality stories or just positionality.
Dan F	.I'm looking forward to getting more experience with positionality stories as well as how to encourage students to write some about a topic as well. Also I like the articles and how they relate to potentially improving my approach to integrating equity into the classroom, including the possibility of utilizing some of them for PD with my coworkers.
Rebecca Bennett	Starting with the slow read and discussing the importance of positionality stories in the classroom, this day has been thought provoking. Understanding our embodied perspectives as instructors, the difference between having access and being set up for achievement (equity), and using stories to "open spaces for students to contest conditions and assumptions. The articles were also wonderful reads. The energy tracking diagrams will be a great way to solidify student understanding of energy transfers and transformations. We also read about "framing equity" which is a great way to think about classroom activities and how they relate to equity issues. The third article discussed how science might be different if the context, place, culture, religion, that first observed the laws of nature had been different. The fourth article discussed a more complete energy equation that should help students better understand energy transfers and transformations within a system or into and out of a system.
Golsin Rashid	The 4 articles had so much information, and new ways to approach energy in classes. One thing stood out for me is everything that we are talking about and emphasizing, it also needs to be balanced. Access and achievement, or identity and power. After today's rich discussions, I am thinking how I can imply more identity and power in my classroom. Because usually schools do focus and engage access and achievement, but, how about other important elements in the energy and equity system. My group and I talked a little bit about how nice it would be to include some other rooted scientist from western culture. When I was growing up in Arab schools(Iraq), the schools spotlighted Arab, muslim scientists as well as western(non arab or muslim scientists). I definitely loved to listen to some of you sharing your personal stories, very powerful. Thanks everyone!!

Related Readings

In case you were wondering what Jewett's other three issues were about:

Jewett Jr, J. W. (2008). Energy and the confused student I: Work. *The Physics Teacher*, *46*(1), 38-43.
Jewett Jr, J. W. (2008). Energy and the confused student II: Systems. *The Physics Teacher*, *46*(2), 81-86.
Jewett Jr, J. W. (2008). Energy and the confused student III: Language. *The Physics Teacher*, *46*(3), 149-153.