Community-Facing Performance Tasks to Increase Student Engagement

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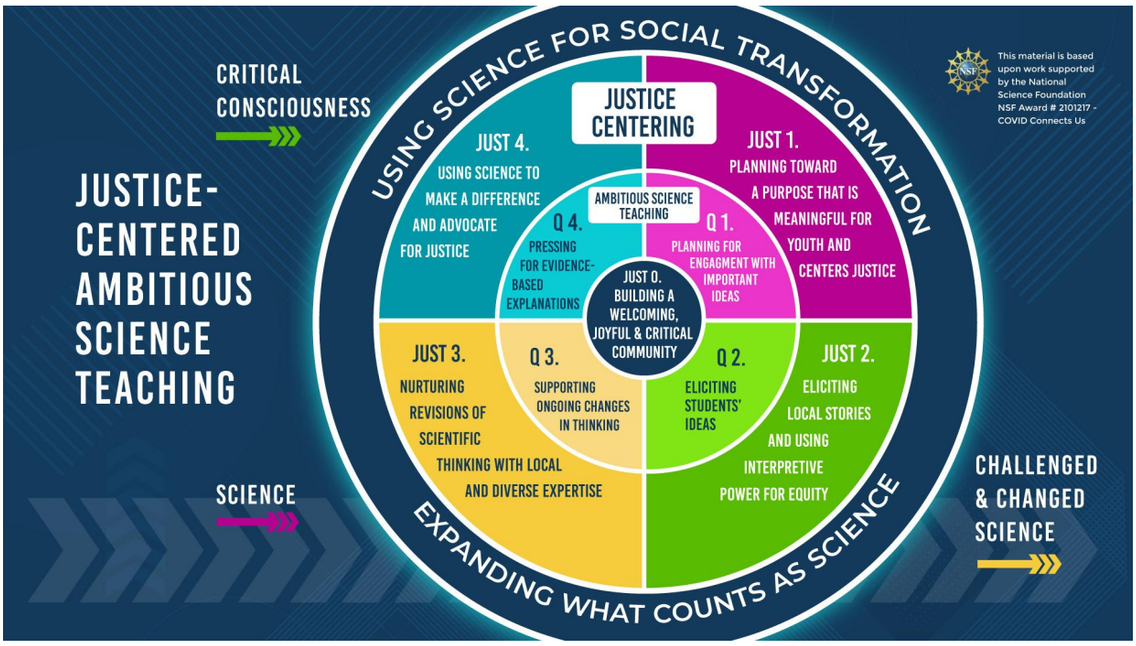

What was the issue?

Students are experiencing a disconnect between the science they learn in school and their authentic lives. Questions like, " Why does this matter" or "When will we ever need to know this" are common among our students and classrooms. Science and classroom learning prioritizes voices that often don't reflect the experiences and identities of our students, and school science learning often does not directly address issues in the community. **Students aren't finding the intersection between science and community action; they don't see themselves as community-impacting scientists (let alone citizens).**

Why does it matter to YOU?

"Students engage more actively with an authentic audience. Something as small as "teach it to a 5th grader" can help empower students as scientists and engage them in deeper learning"

"As a teacher, there's nothing more rewarding than watching my students take ownership of their learning. And when that learning is connected to issues that matter to their local community, it's truly inspiring to see how engaged they become. Throughout our project, I could sense a growing sense of purpose among my students, as they recognized the relevance of what they were doing and how it could impact their community.

When it came time to present their projects to the wider community, I was blown away by the quality of work my students produced. Whether they were writing letters to the mayor or sharing their ideas with other students, there was a real sense of authenticity and passion in their work. It was clear that they had not only understood the importance of the task at hand, but had truly embraced it as their own.

What struck me most was how the students seemed to rise to a higher standard when they felt this sense of ownership. They were more diligent in their research, more thoughtful in their arguments, and more creative in their solutions. Watching them present their work with confidence and conviction was a true testament to the power of community-facing performance tasks."

"This project helped our class advocate for racial equity regarding tree equity in Rochester. After learning about ecology and how trees impact human health, students dug into the issue that neighborhoods with more People of Color in Rochester have fewer trees than areas with more White people.

Students first learned about the issue by diving into local investigative reporting on the issue. They then analyzed local maps and decided where they would want trees in their lives. Finally, they created posters encompassing the issue in Rochester, how trees impact human health, and advocating for more equitable tree cover. They then presented these posters to a local reporter and recommended tree locations to the City of Rochester.

I found that students really appreciated the ability to get granular in terms of how science impacts their lives, and to use this knowledge to advocate for change within our community."

The JuST Practice

We implemented authentic, **community-facing performance tasks** that provide students with opportunities to identify more as community-impacting scientists. *Community* is viewed in the broadest of senses for the tasks we'll each ask students to interact with- the school community, peers, the DEC, the town/city/space the school is, the digital community, etc. *Performance tasks* in this context are anything that asks students to use and share their science in a way that falls outside of traditional classroom testing and assessment.

Why do we think this strategy has been and will be effective?

Students struggle to make connections between what we learn in science class and their lives outside of the classroom. When this is the case, engagement suffers. In addition, students do not get the opportunity to develop their identity as young people who can use scientific knowledge to empower and impact their own communities. "Synergy among problematizing, authority, accountability, and resources helps students avoid disengagement due to boredom, frustration, or lack of personal interest" (A. Engle, R., & R. Conant, F., 2002, p.409). In order for students to engage in a science classroom, they need access to science as a discipline and authority as agents of change in identifying community problems and excellences.

Assessment of classroom learning often relies on reproductive strategies where students are asked to recall ideas in a one-to-one setting for the teacher only. Learning is not authentic when learners seek one right answer achieved through the same rote processes and tasks; authentic domains exist where students can grapple with discovery of the best fit in that situation. Learning should be "productive not reproductive" (rephrased from p.409). Authentic and empowering demonstration of learning can happen when students are tasked with sharing their understanding with a broader community. Empowerment through community- engagement and taking on the role of an expert can help students build identities as agents of change who can use science to help their communities.

Issues to Think About

Strategies for helping students determine performance tasks (when possible) will be:

- Iterations of modeling and other science and engineering practices to build confidence in showing science (diagrams and descriptions) and gallery walks with peer feedback to build confidence in sharing science
- Showing them other examples of student-created community science (Greta T, science fair, reading about a local community-impacting scientist, etc)
- Some ways for kids to figure out what their problem is after accessing the above - what do kids see as something they can take charge of (discussion, google form, ask your family, etc.) ("what's a problem that's important to you that you want to investigate or effect change relating to?")
- Ask students and their families via surveys done as home-learning to reflect on their own community and how this science connects.
- Community building and trust in the classroom- translates into community-facing science
- Identifying problems and potential solutions within their community
- Look at mental/physical health of students, school issues (lack of recycling, over-use of materials, etc), neighborhood issues (safe green space, clean water/where does drinking water come from)

Recommended Actions You Can Take Within the JuST Framework

Planning for engagement with ideas that have cultural significance

- Build a culture of inquiry, independence, and questioning the way we do and share science
- Survey students early in the year to elicit ideas for your project
- Scaffold skills throughout a year- don't expect full engagement and ability to make meaningful change the first time. This is a new skill set for students who need time to practice.

Interrogate for Justice

This strategy is intentionally heading for quadrant 4, pressing for and using evidence-based explanations for positive change by using embedded strategies in the other quadrants. By finding the intersection between science content and authentic problems in students' lives, we were able to move toward students using their science in impactful ways.

There are, however, a few barriers to success listed below.

- **Systems in schools** that may limit teachers' abilities to help students create authentic, community-facing tasks (ex: schedules, copious mandated standardized testing, lack of material and professional teacher support, different expectations between classrooms,

Eliciting students' ideas and supporting ongoing changes in thinking using interpretive powers of equity

- Supporting students in analyzing locally and personally relevant data sources.
- Students should practice sharing their knowledge in the safe-space of the classroom before they share with a broader authentic audience
- Student lived experience is a critical data point for them to use to advocate for change

Pressing for evidence-based explanations for positive change

- Scaffolding the project- help students succeed by having scaffolding that helps them know what information would make a strong project.
- Student choice is critical in terms of *both* topic and mode of communication (i.e. poster, video, etc.)
- Presenting to or sharing with an authentic audience is key!

some lack of elementary science experiences, lack of elementary teacher support and training in supporting kids development in science)

- **Classroom composition**- With such diverse and large classrooms, we found some difficulty in gaining buy-in from *all* students on a community issue related to content. Questions to ponder: Is the "community" the same for each kid in a class? Will they all believe that the task they're completing is authentic, relevant and meaningful?
- **District-wide culture issues**- We found some challenges related to district and building expectations of students related to race and socio-economic status that had been adopted by students. In many places there's a culture of learned helplessness and the barrier of entrenched student apathy that needs to be actively addressed and combatted in science class.
- **Collaboration between colleagues** - How do we make this sustainable for teachers and transferable / teachable for others? How do teachers from wildly different contexts even compare resulting data? (and is this a problem or not at all?)

References

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Ladson-Billings, G., Settlage, J., & Southerland, S. (2012). I Used to Love Science... and Then I went to School: The Challenge of School Science in Urban Schools. In *Teaching Science to Every Child: Using Culture as a Starting Poin*t (Second, pp. xiii–xviii). New York, NY: Routledge.

THE PROCESS

Findings Narrative:

We each carried out at least 2 CFPT's during this school year. These tasks were locally relevant and positioned students as experts, giving them the ability to use the science they were learning to advocate for positive change. We collected student work and survey responses and analyzed them to discover themes regarding how this project led to feelings of agency, self-efficacy, and/or engagement in science. The themes we found through the analysis of student work were:

1. Students seemed by-and-large more engaged by this type of work compared to normal classwork, however, this is not a 'silver bullet' that will lead to 100% engagement.
2. Student choice in terms of topic and/or mode of presentation added to student engagement. For example; having the choice to create a poster or a video gives students the ability to choose what works best for their skillset and content.
3. Having an authentic audience is key to making the project seem powerful. When the presentation to an audience is limited, such as hanging posters at school, this was less powerful than when the students were required to present their findings to a live audience. Younger students in the same school are a great target audience.
4. Scaffolding of projects is critical, especially to help learners such as SWD or ELLs.
5. We are looking forward to getting better at integrating the projects throughout a unit instead of just at the end. How can we make projects happen in "baby steps" over some time to create deeper connections?