

APRIL Hi. My name is April Luehman. I am an Associate Professor at the University of Rochester in Rochester, New York.

LUEHMANN: We call the framework the justice-centered ambitious science teaching framework. We started identifying the components of the framework in 2017 or '18 when our pre-service teachers were working with rural youth to implement ambitious science teaching in a way that really sustained their local culture.

So we took up each of the core sets of practices of ambitious science teaching and then identified ways in which we start always with what is meaningful to kids in the community and still really helps them develop meaningful and rich understandings of science.

So the framework came from both lived practice as well as a connection and combination with the theory that we know around justice-centered teaching. So if you pull each of the quadrants, I'll start with one. So quadrant number one is planning with important ideas. But if we pull that out, important ideas or relevant ideas don't always get all kids. So like we focus more on meaningful. What is meaningful to kids?

So like maybe music is relevant to kids, but maybe an opera singer cracking a glass isn't so meaningful to all youth. So how do we pull that to be a little bit more meaningful to the youth at the particular youth that are sitting in our classroom at that particular time?

In addition, we need to be thinking when we plan about how this science could actually make a difference in the community and work toward social transformation. So the JuST one pulls that out to be planning toward a purpose that's meaningful for youth and centers justice.

If we go to the second quadrant, eliciting student ideas is where we got to start. We got to start where kids are, and that doesn't really change. But what we're pulling out in JuST two is the focus on stories more than ideas or concepts. So like when kids tell us the stories they've had related to these science ideas, we learn so much more about youth culture, both the dynamic culture that they live every day, but also their heritage culture, heritage culture of their communities.

And that starts teachers as learners of their youth. And I think that is a really transformational pivot, that we're not teachers first, we're learners first. And so we need to spend time in the places of youth and community. We need to spend time as listeners and learners. And then, only then, can we sort of bridge to take their ideas and help them engage with and wrestle with deeper science ideas.

So then we go on to quadrant three, supporting ongoing changes in thinking. And of course, we want to keep doing that, revise thinking over time. But the teachers that worked with the Sodor's community in the summer of '18 really showed me how powerful it was to bring community expertise in as a resource as well as a partner in this science thinking.

So we had a farmer come in who said, I don't know anything about science. And the kids-- it was team loyal to soil and they interviewed the farmer and there was so much, of course, science in farming. I mean, we learn or understand foundational understandings of genetics actually came long before science put a name to it and we build on the understandings that Indigenous peoples have shown us over time.

But farmers, of course, build on this and have rich understandings of soil composition and growth patterns and genetics and many other things. And so it shaped, not only how kids understood the science, but how they related to their own community in really asset-based ways and really positive and powerful ways. So it sort of served the purpose of sustaining local culture.

And then if we go to the fourth quadrant, then pressing for evidence-based explanations, the JuST four quadrant pulls it out a little bit farther to say why. So it's not just explanations for the teachers' sake or explanations for the test or explanations for a command of science, it's really like how do we use the science we're learning to make a difference in our community and press for social change?

I can say that in developing the framework with the teachers in 2018, we worked with a rural community and prioritized really that local culture. But we hadn't taken up really anti-oppressive stance in that summer explicitly like we could have and needed to. So that's where the framework adds a component of aspirational work that we hadn't done yet. And so it clearly communicates a commitment to social justice and equity.

There's a center that wasn't in the beginning, AST, that I know of, JuST zero we called it, which is building a welcoming, joyful, and critical community. And so all of the work that we're doing with youth is sort of an act of trust and an ongoing relationship with them. And so it prioritizes the fact that we need to start as people in relationship and develop that over time. And joy is a critical part of that, especially for youth, but for all of us.

And then when I say critical in the JuST zero section, it's really about nurturing youth's critical consciousness as well as our own as teachers. And that is an ongoing project. We start wherever we are and we continue to learn more about power imbalances and inequities in the world and take action about-- and take action for those.