Great public engagement with science is Equitable

Advancing Public Engagement Across LTERs
APEAL

Great public engagement with science is:

- **Strategic** - guided by clearly articulated, audience-specific goals and objectives
- **Cumulative** - supports ongoing, positive encounters between scientists and publics via multiple pathways
- **Reciprocal** - grounded in two-way exchange and mutual meaning-making
- **Reflexive** - operates in iterative loops of reflection and adaptation
- **Equitable** - recognizes systemic injustices in science and society, acknowledges biases, and is intentionally inclusive
- **Evidence-based** - builds from knowledge about how people learn about and use science

4 Dimensions of Equity

Contextual equity - The systems and structures that the project is working within and against (also referred to as structural equity).

Distributive equity - How costs, benefits, responsibilities, and resources are distributed across activities and stakeholders in a project.

Procedural equity - Processes, procedures, and norms through which decisions are made.

Recognitional equity - Respect for knowledge systems, values, social norms, and rights of all stakeholders in policy or program design and implementation

What does it mean to be equitable?

Effective public engagement with science (PES) is responsive to the fact that people have differential access to STEM opportunities due to systemic injustices in science and society. Equitable PES recognizes these injustices and works *with* communities to create inclusive spaces that are welcoming to *them*. The figure at the bottom of this page describes four dimensions of equity to consider. Critically, equity only has meaning if it's defined in relation to a specific priority population.

Acknowledging biases

Biases are common and often unrecognized. It is important to understand how biases might be influencing public engagement. Biases may be explicit or implicit and at both the organizational and individual levels. Relevant to PES, organizations and scientists may hold biases about local community members, why people choose to engage or not engage, and what an effective PES activity looks like. Such biases likely influence PES activity design and organizational policies and practices. By engaging in reflexive practice, scientists and organizations can better understand their own biases, and share and reflect on those with community members to foster trust and build relationships.

Recognizing systemic injustices

Structural inequalities have excluded many historically marginalized groups from STEM spaces, making individuals from these groups feel unwelcome or devalued. Such inequalities include language barriers, cultural appropriation, cultural insensitivity, geographic disparities, and economic barriers. Historical exclusion and discrimination in STEM have created a legacy of distrust within some communities. In these cases, repair is needed for effective PES to occur. By listening to community members, those leading PES efforts can better understand community perceptions of science and scientific organizations and what the community's priorities are regarding PES.

Intentionally inclusive

With an understanding of the barriers and biases that limit participation, scientists and practitioners can work together with community members to design PES activities that are equitable. While the specific inclusive choices you make will depend on the community you are working to include and what you learn together, there are some practices to keep in mind. Here are three practices that individuals can implement:

- The activity should be designed to be accessible in terms of the physical space and content (e.g,. visuals, language, etc.).
- Hold activities in familiar or neutral spaces where the community group typically gathers (e.g., community center, church, school, etc.)

Case Study: Equitable PES in Action

By Mae Davenport, MSP LTER Co-PI, and Shanai Matteson, Artist & Cultural Community Organizer

The Minneapolis-St. Paul Metropolitan Area (MSP) LTER prioritizes connections between University researchers and communities that address racial, income, or place-based disparities in environmental justice work. In the spirit of understanding and supporting equity, the MSP LTER Community Engagement (CE) team began a series of monthly art-based engagements at research sites and community sites around the Twin Cities in December 2023, called Rambles. Grounded by an ecologically relevant hands-on activity (such as buckthorn wreath-making, soil printmaking and making air-filters), CE artists facilitate drop-in discussions where community and research voices can be shared at the same table. The Rambles increase public awareness of LTER research and potentials for collaboration, and they encourage creative and connected approaches to community engagement on the part of University research teams. Each Ramble builds on the last, sparking internal relationships and idea-sharing on community engagement, as well as a base of interested community members who return to Rambles and share with their networks. Over time, this grows a mutual understanding between residents and researchers that informs potential research sites and implementation.

For example, MSP has built relationships with the East Phillips neighborhood via the Rambles. East Phillips has struggled with poor air quality because of a legacy of major industrial polluters in the area. Its residents, many of whom are Black, Indigenous, and people of color, experience systemic pollution among other environmental justice and socioeconomic challenges. The Tamales y Bicicletas (TYB) Ramble enabled East Phillips residents to engage with MSP researchers about the best places to track air pollution that concerns neighbors, using LTER lichen air monitors. The Ramble also strengthened relationships among neighborhood advocates like the East Phillips Health Team, TYB urban farms, and community leaders. The LTER and the CE team continue to build connections among MSP communities and scientists through socially-engaged art and science events that center equity and environmental justice.

- Learn about the community's lived experiences and interests. This allows you to connect activities to timely, real-world issues that are relevant to the community.

Inclusive, institution-level practices to consider include:

- The institution can implement a community advisory board with members of the priority population. This advisory board should have decision-making power and members should be compensated for their time.
- Together with an advisory board, leadership should interrogate questions of how the priority population is affected by the science. For example, is the community facing an undue burden? How are they benefitting from the presence of the institution?
- Organizations can help foster a sense of belonging if the diversity of the community is represented in the scientists and science communicators they interact with.

Evaluation planning

When measuring the use and impact of equitable practices, the evaluation itself must be equitable. There is a growing movement recognizing that evaluation is not objective, but instead should be in the service of equity. Evaluation tools should be developed with community members to ensure that they are meaningful, appropriate, and culturally-responsive. For example, if it is important to document who participated in programming, scientists and community members might work together to decide the meaningful ways to describe different groups when asking for demographic data.

Tracking process metrics—like the specific inclusive strategies used to create a welcoming environment—can document attempts at equitable practices. In this case, outcomes might focus on sense of belonging at the event, if community members agreed that this was an important thing to measure. It might also be important to continue to learn about people who aren't participating yet to understand their perceptions of science and science organizations, or the ways that particular scientific information might be of interest to or beneficial to them.

Learn More

Canfield, K., & Menezes, S. (2020). *The State of Inclusive Science Communication: A Landscape Study.* Metcalf Institute, University of Rhode Island. Kingston, RI. (to read more about inclusive science communication approaches)

Dawson, E. (2019). *Equity, Exclusion and Everyday Science Learning: The Experiences of Minoritised Groups.* Oxon, OX; New York, NY: Routledge. (to learn more about systemic exclusion in informal STEM learning institutions)

Garibay, C., & Teasdale, R. M. (2019). Equity and evaluation in informal STEM education. *New Directions for Evaluation, 2019*(161), 87-106. (to read more about equitable evaluation in informal STEM spaces)

Friedman, R. S., Law, E. A., Bennett, N. J., Ives, C. D., Thorn, J. P., & Wilson, K. A. (2018). How just and just how? A systematic review of social equity in conservation research. Environmental Research Letters, 13(5), 053001. (to read more about the four types of equity on the first page)

W.K Kellogg Foundation. (2021). Doing Evaluation in Service of Racial Equity: https://everychildthrives.com/doing-evaluation-in-service-of-racial-equity/ (to learn more evaluation that advances racial equity)