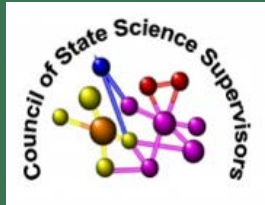


# ACESSE: Collaborative Network for Improvement in Science Education



Read the notes  
on each slide to  
learn more about  
project details.

This work is funded by the National Science Foundation under grant #1920249. However, all opinions are strictly our own. The project is a collaboration with the Council of State Science Supervisors, the University of Washington, and the University of Colorado at Boulder.

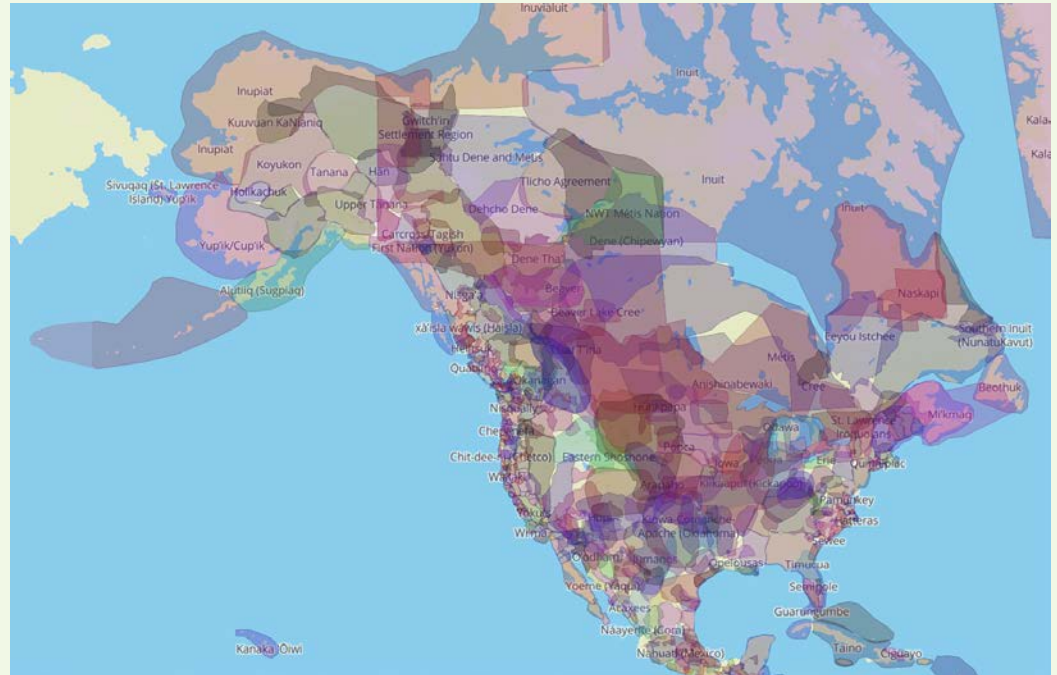


# Tribal Land Acknowledgement



**Native Land**

<https://native-land.ca>



# ACESSE stands for...

Advancing Coherence and Equity in  
Systems of Science Education



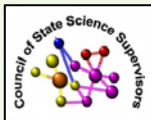
## What makes for an equitable, coherent state system of science education?

<https://sites.google.com/view/acesseproject/home>

# The ACESSE Collaborative



# ACESSE Project Team



## Principal Investigators



Philip Bell



Maya  
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Tiffany  
Neill



Bill  
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## Other Project Team Members



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Trang  
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**State Contacts that Helped Build Sensing Tools:** Brian Caine, Eric Hall, Mike Heinz, Lauren Kaupp, Kristen McKinney, Megan Schrauben, Douglas Watkins

**Past Principal Investigators:** Lizette Burks and Sam Shaw

**Past ACESSE Project Team Members:** Gina Tesoriero, Robbin Riedy, Shelley Stromholt, Kerri Wingert, Katie Van Horne

<https://sites.google.com/view/acesseproject/home>

# Research Questions



1. How is instructional guidance to teachers from states and districts changing over time?
2. How can we support the development of a shared understanding of equity and a commitment to a coherent set of equity projects across states?
3. How are leaders' strategic use of resources changing over time?

# Organizing for Equity and Coherence

## PROMOTE EQUITY

Expand learning  
access & disrupt  
inequities

Center justice in  
instructional  
practices

## CRAFT COHERENCE

Build a shared  
vision for science  
teaching

Bring key  
components into  
alignment

## ORGANIZE TOGETHER

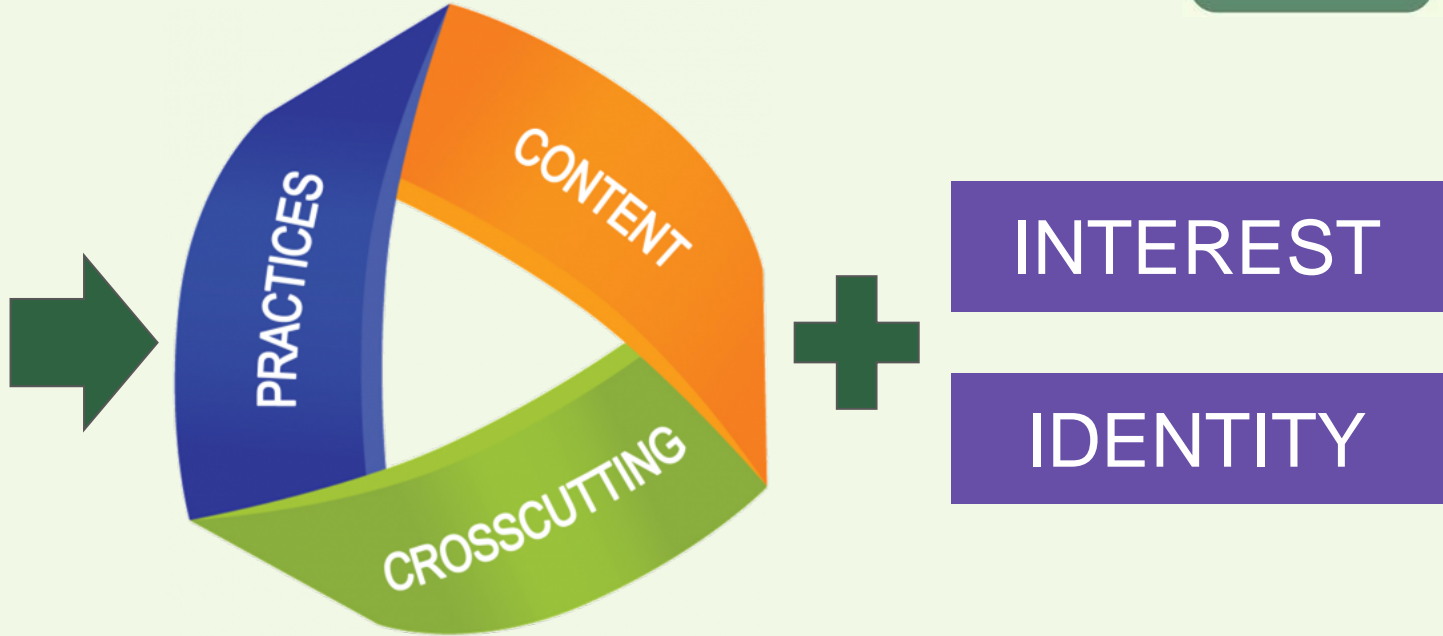
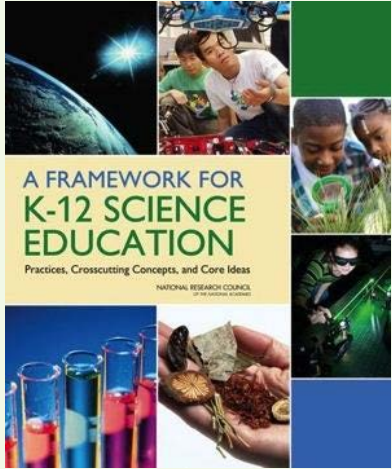
Build a distributed  
team to lead

Network to share  
strategies & tools  
for change

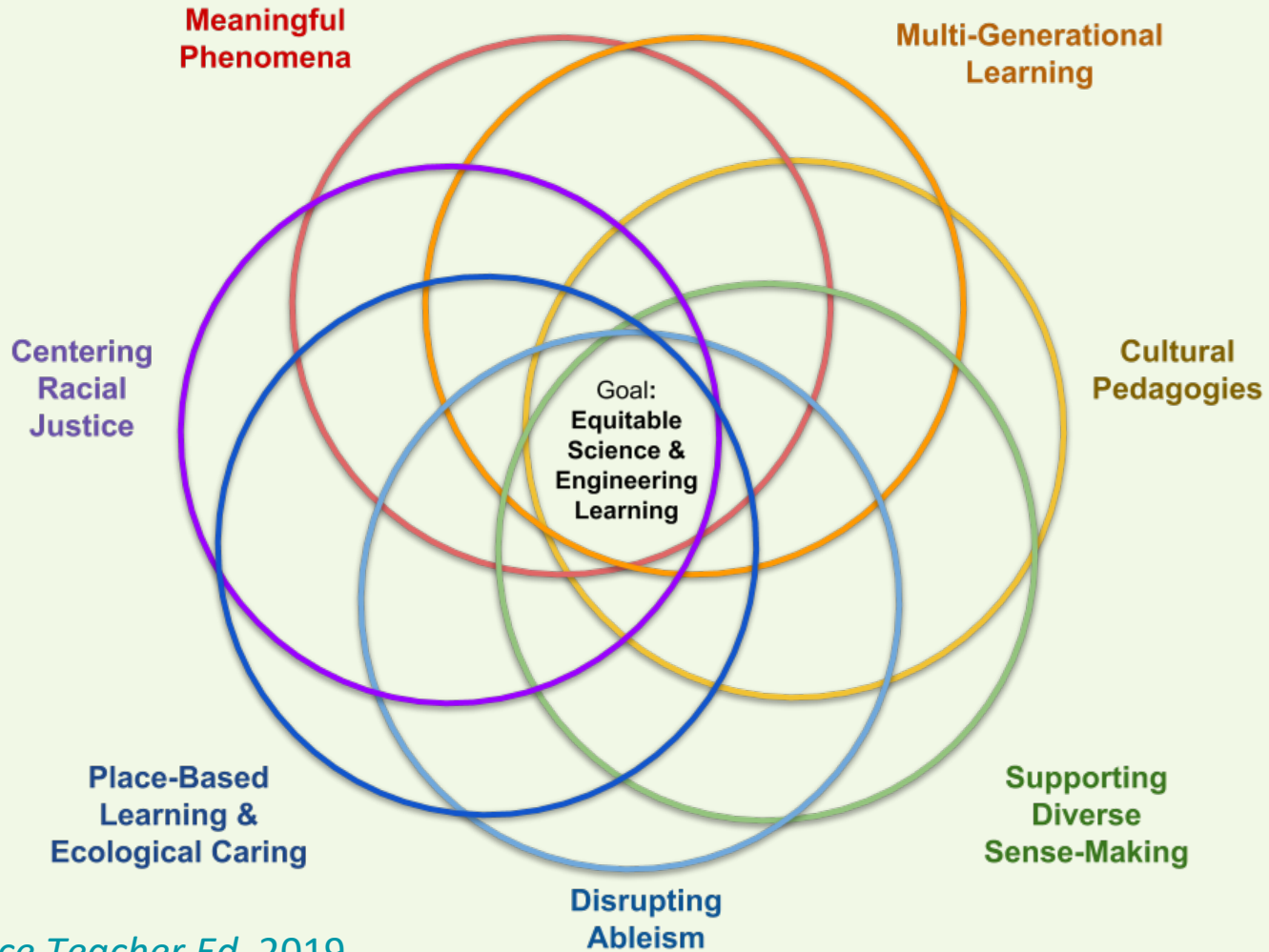
Leadership capacity development for equity



# Supporting a 5 Dimensional Vision of Science Education







# Levers for Promoting Coherence and Equity

## 1) Classroom Formative Assessment

Cognitive & cultural, relevant 3D tasks, facet analysis, self-documentation, diverse sense-making.

## 2) Instructional Materials Adaptation

Support principled adaption to attend to local features.

## 3) Leadership Capacity

**Development for Equity**

Professional learning

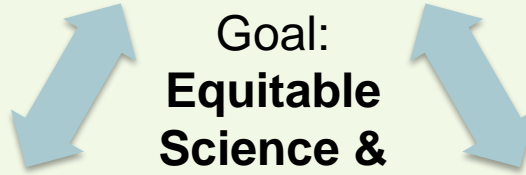
for strategic leadership.



# The Work of ACESSE



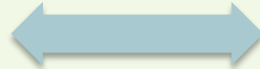
Sensing & Guiding Improvement 



3 Lines of Work

Leadership Capacity  
Development for  
Equity 

 Co-Design of  
Professional  
Learning Resources

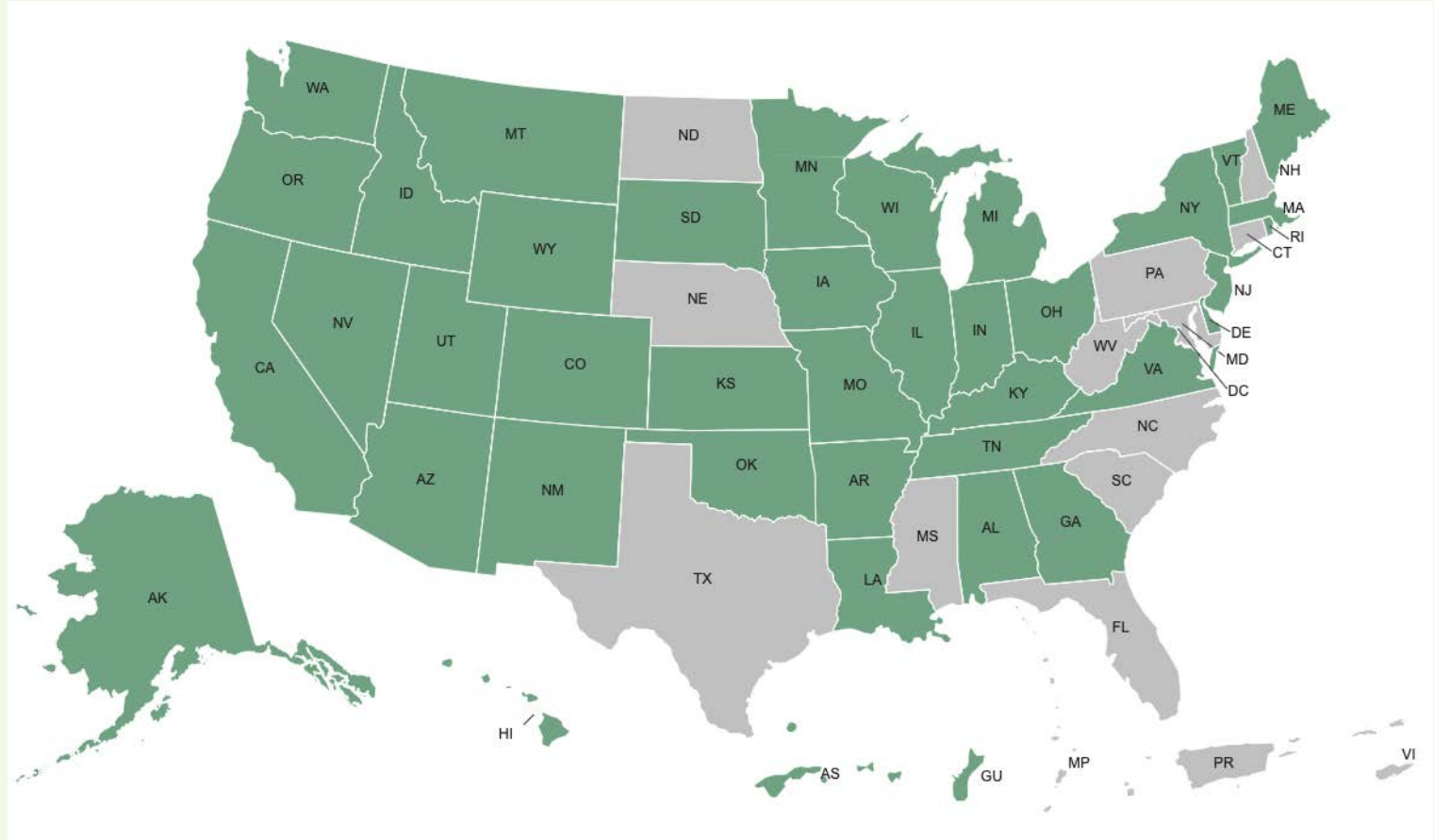


Affinity Work Groups (within the network)

Local State Teams

Collaborative  
Groupings

# ACESSE Network



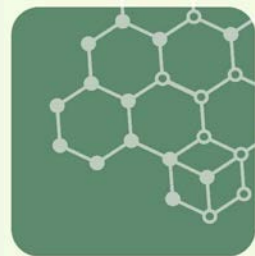
# Field-Level Connections & Collaborations

- NASEM Board on Science Education ([BOSE](#))
- National Science Teaching Association ([NSTA](#))
- State Collaborative on Assessment and Student Standards ([SCASS-CCSSO](#))
- LPI Science Performance Assessment Learning Community ([SPA-LC](#))
- National Science Education Leadership Association ([NSELA](#))
- [OpenSciEd](#) Instructional Materials



# Sensing & Guiding Improvement

Designed to help local teams understand local systems and set improvement goals



## State Leader Survey

Priorities for change  
Perceptions of policies and processes to support equitable science teaching  
Awareness and involvement in equity projects

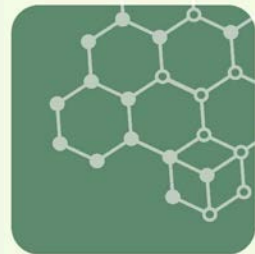


## State Stakeholder Survey

Priorities for change  
Perceptions of policies and processes to support equitable science teaching  
Awareness and involvement in equity projects  
*Noticing for Equity*



# Sensing & Guiding Improvement



## Changes, supporting and hindering conditions for equity in states

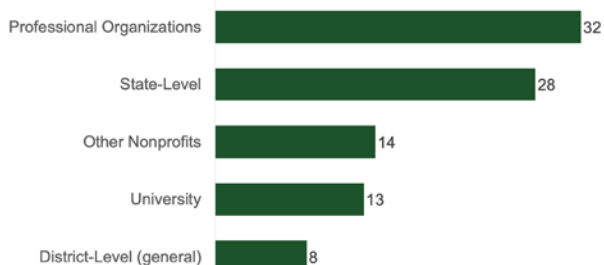
### Top changes respondents would make in their state to support science learning

(n=45, each of whom could name three changes, each of which could get multiple codes)



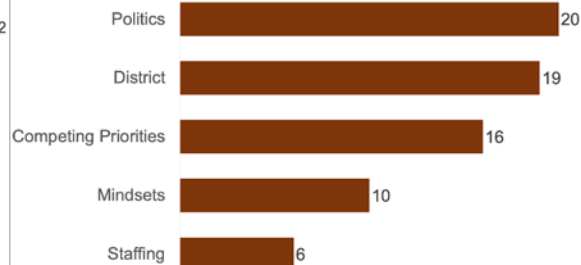
### Top Factors Named as Supporting Equitable 3D Implementation

(n=45, each of whom could name as many supports as they wanted)

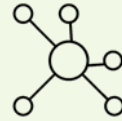


### Top Factors Named as Inhibiting Equitable 3D Implementation

(n=45, each of whom could name as many supports as they wanted)



# Leadership Capacity Development for Equity



**Participate in a network focused on improving state and local policies aimed at increasing coherence and equity based on the vision of the Framework for K-12 Science Education**

- **Collaborate with and learn from other state science supervisors and researchers**
- **Develop or enhance state and territory networks leveraged to further implement the vision of the framework**



# Leadership Capacity Development for Equity



Frame Amplification: Heighten the moral salience of addressing the problem (either as you define it or as originally defined).

What might you say to district leaders?

**Add an idea**

Moral imperative to do what is right for students and their futures, and not what is most expedient for adults

The educational standards define how the educational system is defining educational achievement in terms of scientific literacy. We think you should join in this important equity purpose!

WHOSE INTEREST ARE BEING SERVED?

I'm wondering where your commitment to not supporting the shared educational standards for scientific literacy is coming from. Is it from your history? Your field? A funder? Whose interests are being served by holding that commitment?

Ensuring students are prepared for college and career with the building blocks of science presented in high school science standards is critical. Without those concepts students will be at a disadvantage for success.

Will this prepare our students for life/success after graduation? We don't want to close doors for any child. We want them to be prepared to go to college, military, work etc. and be able to choose that path even after graduation.

"Inquiry involves engaging in the practices"

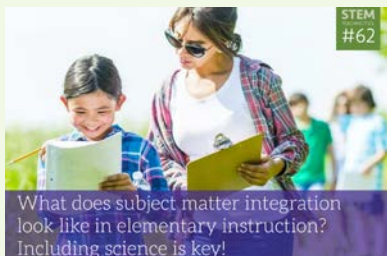
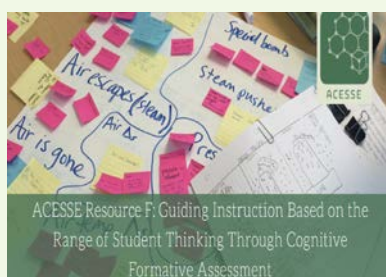
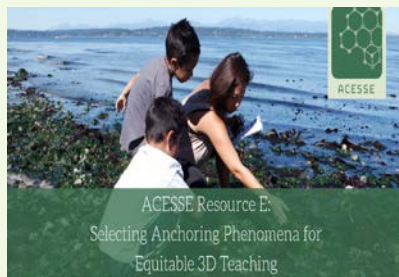
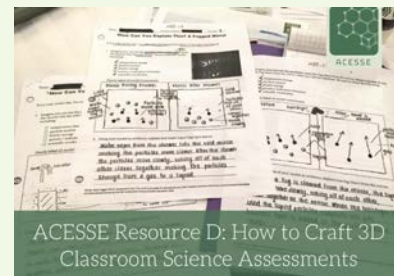
"3D to 5D -- interest and identity matter!"

Portal frames can be invoked in any of these strategies

"What's good for science is good for literacy"

"Doing science includes cultural ways of knowing"

# Co-Design of Professional Learning Resources



Resources have been accessed, adapted & used very broadly.



# ACESSE Collaborative Design Process



## Identify

- Center on justice
- Interview / Survey
- Deliberate

## Ideate

- Brainstorm
- Theorize
- Specify / mock up
- Design

## Develop

- Create
- Use / test
- Review
- Iterate

## Publish

- Polish & Post
- Support Adaptation & Use

## Revise

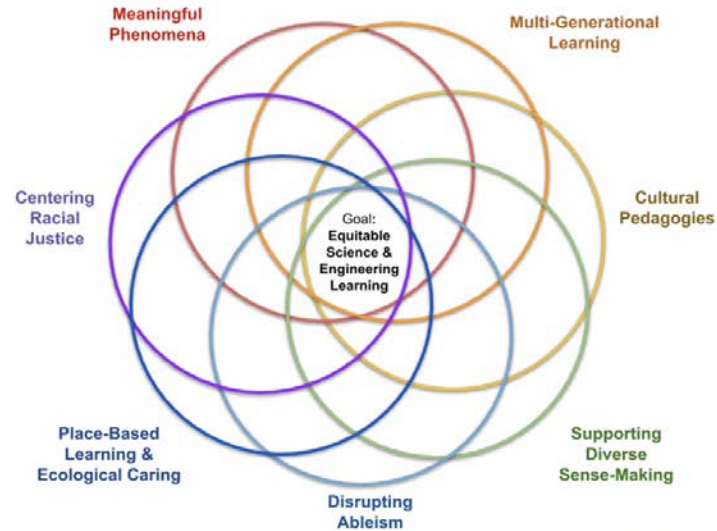
- Analyze
- Reflect
- Improve

← Engage in equity & justice learning and social dreaming throughout →



ACESSE resource development is guided by an intersecting equity project framework.

Collaborative design work helps refine such resources.



*This brief outlines ways science teachers can engage in seven intersecting equity projects (Bell, 2019).*

**STEM**  
TEACHING TOOL  
**#71**

How can you advance equity and justice through science teaching?

<http://STEMteachingtools.org/brief/71>





# Professional Learning Resources to Support NGSS / Framework Implementation

- Co-designed by practitioners & researchers
- Tested & refined over time
- Easily shareable—over social media, email, paper



**STEM #15**

Overview: How can we promote equity in science education?

**What Is The Issue?**


Equity should be prioritized as a central component in all educational improvement efforts. All students can and should learn complex science. However, achieving equity and social justice in science education is an ongoing challenge. Students from non-dominant communities often face “opportunity gaps” in their educational experience. *Inclusive approaches to science instruction* can reposition youth as meaningful participants in science learning and recognize their science-related assets and those of their communities.

**WHY IT MATTERS TO YOU**

- Teachers should work with colleagues to implement instructional strategies to make science learning experiences more inclusive for all students.
- District staff and PD providers should integrate a focus on equity and social justice into every teacher learning experience in relevant ways—and not treat diversity as a segregated topic.
- School leaders should promote a sustained focus on inclusive science instruction. Efforts should be made to recognize and monitor equity-related opportunities to learn in science.

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[STEMteachingtools.org/STEM15](https://www.stemteachingtools.org/STEM15)



**STEM #67**

Focusing Science and Engineering Learning on Justice-Centered Phenomena across PK-12

**What Is The Issue?**

In the Framework vision for science education, students engage in active investigations to make sense of natural phenomena and apply and build solutions to problems. Examining these investigations on justice-centered phenomena can be a powerful and rightful way to support science and engineering learning. Justice-centered investigations can open up important opportunities for students to engage in projects that support equity for communities and to see how the application of science and engineering are fundamentally entwined with political and ethical questions, dimensions, and decisions.

**WHY IT MATTERS TO YOU**

- Teachers should help students engage in projects that address intersecting systems of oppression (e.g., racism, sexism, classism, ableism, homophobia, etc.).
- District Staff & PD Providers should help educators develop justice-centered investigations and learn to facilitate complex interdisciplinary conversations.
- School Leaders can help teachers connect with justice-centered organizations (e.g., to organize class visits, feedback, student presentations)—in addition to supporting justice within the school walls.

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[STEMteachingtools.org/STEM67](https://www.stemteachingtools.org/STEM67)



**STEM #61**

Using science investigations to develop caring practices for social-ecological systems

**What Is The Issue?**

How can we be more present for other species at a time of ecological devastation? Developing deep commitments to the human and more-than-human inhabitants of ecosystems is crucial for cultivating students' caring knowledge and practices within the escalating challenges of the climate crisis. More-than-humans are typically represented in STEM curricula as objects of observation or utility rather than dynamic beings with rights to act and be recognized. All learners should build interdependent, caring relationships with more-than-humans focused on shared thriving to promote ecological identities, *deleg. STEM learning about local places, and responsibilities.*

**WHY IT MATTERS TO YOU**

- Educators should create opportunities for learners to build relationships with various more-than-human beings in local ecosystems and support inquiry processes that develop learners' concern and care for their relations.
- District Staff & PD Providers should help educators learn about local flora and fauna and engage through place-based education to support learners' building of multispecies relationships.
- School Leaders should ensure that educators have sufficient time, space, and resources to engage learners in STEM field investigations.

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[STEMteachingtools.org/STEM61](https://www.stemteachingtools.org/STEM61)



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