



# 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 resource and monitor equitable opportunities to learn science.

## Things To Consider

- [All individuals can learn complex science](#). The NRC Framework and NGSS vision is that *all* students will have access to high quality science learning opportunities and will be able to succeed in science.
- An “achievement gap” between students from low and high income backgrounds and from dominant and non-dominant communities persists in science—as in other subjects. Research indicates this largely results from inequalities in [the opportunities youth have to learn science](#) and failures to recognize and leverage the existing science-related competencies of youth and communities.
- The NRC Framework highlights how [“all science learning can be understood as a cultural accomplishment.”](#) Research shows that a cultural perspective can transform learning experiences to make them more engaging and meaningful for learners. [Informal learning environments can be particularly good at engaging youth from non-dominant communities in science learning and identification.](#)
- Research is showing that [having a diversity of perspectives leads to more rigorous solutions](#). This diversity of perspectives can also be engaged to increase the sophistication of learning in the classroom.

## Attending To Equity

From: Bang, Brown, Calabrese Barton, Rosebery & Warren, Toward more equitable learning in science, In *Helping students make sense of the world using next generation science and engineering practices*, NSTA.

- Notice [sensemaking repertoires](#). Consider students’ diverse sensemaking as connecting to science practices.
- Support sensemaking. Support students to use their sensemaking repertoires and [experiences](#) as critical tools in engaging with science practices.
- Engage diverse sense-making. Students’ scientific practices and knowledge are always developing and their community histories, values, and practices contribute to scientific understanding and problem solving.

## Recommended Actions You Can Take

- Review [these case studies of instructional approaches](#) and read about how to support equity in [the NRC Framework](#) and [NGSS](#).
- [Design learning experiences to grow out of the lives of learners](#). Broaden “what counts” as science and [engineering](#) in your teaching. [The “scientific method” view of science is mistaken. Youth often engage in sense-making in out-of-school time in ways that relate to science. Communities routinely develop systematic knowledge about the natural world in relation to their interests and values.](#)
- Collaborate with educators and community members who share an interest in implementing specific equity strategies in science.

## REFLECTION QUESTIONS

- What are your short- and long-term goals in promoting equity and social justice in science? What are possible next steps?
- Think about the scientific phenomena you teach and the concepts you want students to understand. How do they relate to the interests and practices of your students’ communities? How can you overlap instruction with the lives of students?
- Relate the teaching principles listed under “Attending to Equity” to your own practice.
- Do you involve those you serve (youth, families, communities) in your teaching decisions?

*“Equity in science education requires that all students are provided with equitable opportunities to learn science and become engaged in science and engineering practices; with access to quality space, equipment, and teachers to support and motivate that learning and engagement; and adequate time spent on science. In addition, the issue of connecting to students’ interests and experiences is particularly important for broadening participation in science.”*

— NRC Framework, p. 28

### ALSO SEE STEM TEACHING TOOLS:

- #11 [Indigenous Science Education](#)
- #14 [Why NGSS?](#)
- #27 [Engaging English Learners](#)

