Fostering belonging in the classroom means creating a learning environment in which each student feels welcomed to learn. When a student feels like they belong, they are more motivated and have a greater capacity to engage with course material and contribute to class activities, all of which supports more effective student learning and success.

In practice, fostering belonging in the classroom includes recognizing and affirming the various identities of our students and demonstrating that we value and care about students as individuals and as learners. Tals

: Shift from competitive to collaborative consensus-building in classroom discussions.

: Emphasize collaborative sense-making and community-building in classroom activities rather than competitive argumentation.

7.

: Use diverse examples and discussions in physics content.

: Include multicultural examples in teaching materials and engage students in discussions about who is represented in STEM fields and whose voices are heard in classroom interactions.

Singleton, C., Deverel-Rico, C., Penuel, W. R., Krumm, A. E., Allen, A.-R., & Pazera, C. 2024. The role of equitable classroom cultures for supporting interest in science. (5), 998-1031.

Caring environments
Classroom culture
Collective enterprise
Science
Science interest

The study investigates how equitable classroom cultures in middle school science classes influence students' interest in science. The researchers used data from 847 students across 34 classrooms, implementing the OpenSciEd curriculum. They found that classrooms characterized by collective enterprise (collaborative scientific sensemaking) and care (students feeling valued and respected) support higher levels of student interest in science. These findings are particularly significant for students from historically marginalized populations. The study emphasizes the importance of classroom culture and relational aspects in fostering student interest in science.

1.

Encourage students to work together to develop explanations for scientific phenomena.

Use group activities where students share and critique each other's ideas to build a collective understanding.

Allow students to generate questions and decide on investigation methods.

Implement activities

points during and after the course to measure long-term effects.

Cole, Darnell. "Constructive criticism: The role of student-faculty interactions on African American and Hispanic students' educational gains." *Journal of College Student Development* 49.6 (2008): 587-605.

Constructive criticism
Student-faculty interactions
Educational gains
African American students
Hispanic students
Academic performance
Educational satisfaction

The article by Darnell Cole explores the impact of constructive criticism from faculty on the

2.

Challenge students with rigorous academic work.
Offer emotional and intellectual support to help ! al   u

Cultural Diversäwwwwwwⱽ

6.

Encourage faculty to engage in reflective practice to continuously improve their teaching strategiá raѣe

Design courses where students can participate in authentic research, such as the HHMI–Science Education Alliance (SEA) PHAGES program, where freshmen discover new bacteriophages.

2. Incorporate active learning techniques in introductory STEM courses to make them more engaging and reduce attrition rates.

Use brief lectures interspersed with problem-solving activities that require every student to think, create, or apply their knowledge.

3.

Faculty and staff should take an active interest in students' overall development and achievements.
Establish mentorship programs where faculty and staff guide students in their academic and personal growth.

3.

Develop and enforce policies that address discrimination and provide support for affected students.
Implement anonymous reporting systems for students to report incidents of discrimination and bias.

4.

Organize campus events and activities that promote inclusivity and community building.
Host cultural awareness events and inclusive workshops that celebrate diversity and encourage student participation.

5.

Offer training sessions for faculty and staff on culturally responsive teaching and validation practices.
Conduct workshops on effective communication strategies and building supportive relationships with students.

6.

Conduct regular surveys to assess the campus climate and gather student feedback on their experiences.
Use the Diverse Learning Environments Survey to collect data on student perceptions of validation and sense of belonging.

Dewsbury, Bryan, Cynthia J. Brame. 2019. Inclusive Teaching. CBE—Life Sciences Education, 18, 1-5.

Inclusive teaching
STEM education
Classroom climate
Self-awareness
Empathy
Pedagogical choices
Network leverage

This article na

fostering a positive classroom climate, and making pedagogical choices that support students' sense of belonging, competence, and interest. The authors argue that true inclusivity requires a community effort and leveraging both local and national networks. The guide includes actionable steps and resources to help instructors create more inclusive learning environments.

1.

Address problematic content in assigned readings.
Encourage students to critique and discuss course materials.

Discuss contributions by underrepresented groups.
Use inclus

6
create more inclusive and supportive learning environments. It e

3.

                       : Acknowledge that students may face challenges and offer support.

                   : "If you find yourself not understanding the assigned readings, please set up an appointment with me."

                     : Demonstrate excitement and passion for the subject matter and teaching.

                   : "I hope you actively participate in this course because it makes the lectures more fun."

4.

                     : Clearly communicate course policies, expectations, and available resources.

                   : Outline the attendance policy with understanding, such as "Extenuating circumstances arise that can make attendance difficult. Please let me know if you cannot attend a class."

5.

                     : Promote active participation as a key part of the learning process.

                   : "Come prepared to actively participate in this course. This is the best way to engage you in learning the material."