Welcome!

Creating a Classroom Culture that Supports Equitable Science Learning

NSTA National Conference on Science Education
Denver, Colorado
Thursday, March 21, 2024, 8:00 am - 9:00 am
Be an NSTA Conference Reviewer!
Introductions

Kate Soriano
NSTA Standards Implementation Specialist
ksoriano@nsta.org
Collection of Resources

Denver24: Creating a Classroom Culture that Supports Equitable Science Learning Collection

PRIVATE

6 items

NSTA National Conference on Science Education, Denver, Colorado, March 2024

Earth & Space Science  Engineering  Life Science  Physical Science  Elementary

High School  Middle School

Resources in “Denver24: Creating a Classroom Culture that Supports Equitable Science Learning” Collection

<table>
<thead>
<tr>
<th>Title</th>
<th>Resource Type</th>
<th>Open in Library</th>
</tr>
</thead>
<tbody>
<tr>
<td>1   A Framework for K-12 Science Education</td>
<td>🌐 Web Page</td>
<td></td>
</tr>
<tr>
<td>2   A New Vision for Science Education</td>
<td>🌐 Web Page</td>
<td></td>
</tr>
</tbody>
</table>

https://my.nsta.org/collection/GQtxXOXztuc_E
Session Description

Science is a social endeavor! Gain strategies to transform your classroom into a community of learners in which students and teachers actively try to make sense of the natural and built worlds.

- We figure out the science ideas.
- We figure out where we are going at each step.
- We figure out how to put the ideas together over time.

Source: Next Generation Science Storylines
Meet Our Learning Community

**Alone Zone** (independent thinking time)

Think of classes you have had that you have enjoyed being in, and those you were uncomfortable being in.

- Write down 5 reasons, or things about the enjoyable class that made that class enjoyable and/or comfortable/safe, and
- Write down 5 things that made the uncomfortable class uncomfortable.
Meet Our Learning Community

Trios

- Share your two lists (enjoyable/comfortable and uncomfortable) with your group.
- Identify patterns between your group members’ lists.
- Which two or three characteristics would you elevate as key reasons students
  - enjoy/feel comfortable being learners in a classroom
  - feel uncomfortable being learners in a classroom

Make sure to keep these characteristics in a place on the table visible to all in your group.
Elementary Students Sensemaking

Use patterns in data (evidence) to make a claim in answer to the question about the phenomenon, “What do kidney beans need to successfully germinate?” (3:25-6:25)

https://www.teachingchannel.org/video/lesson-claims-evidence-reasoning

What classroom characteristics do you recognize as contributing to students’ enjoying/feeling safe being learners in this community?
Elementary Students Sensemaking
High School Students Sensemaking

Whole group discussion building explanations using science ideas and cause and effect relationships to answer a questions about what causes population change. (3:30-6:30)

What classroom characteristics do you recognize as contributing to students’ enjoying/feeling safe being learners in this community?
Whole Group

Identify two classroom characteristics you think most contribute to students’ enjoying/feeling safe to be active members of their learning community?

Voting Link
Survey results
Co-Constructing Norms for Equitable Sensemaking

Small Group

● What do these goals* look like, feel like, sound like in the classroom?

● How do we achieve these goals together (norms)? Think: words and actions

Be ready to share how the norms your group created support this community with figuring things out.

*from Mentimeter survey
Co-Constructing Norms for Equitable Sensemaking

7 · ESTABLISH SHARED NORMS

MATERIALS: Science Classroom Norms, science notebook, scissors, tape

Introduce the idea of coming to consensus as a class. Tell students, Soon, we'll try to come to agreement with all our diagrams. The purpose of introducing the consensus task before talking about classroom norms is to get students thinking about how difficult it will be to get all members of the learning community to agree and how we want to make sure everyone is included and all voices are heard.

Introduce science classroom norms. Tell students that before the class moves on with further investigations, it is time to set up some norms for how the class wants to work and learn together. You may want to reiterate productive behaviors you witnessed in the first day of Lesson 1 as a way of communicating to students that they were already operating using some positive norms, but they had not yet talked about them.

Display slide K and pass out the handout Science Classroom Norms. Note: Edit the handout and slide as desired for your classroom.

Remind students that in prior units we have used norms to help develop a productive and respectful learning environment. They are similar to rules but are intended to ensure that all students have a positive learning experience in science class.

The norms on the handout and the slide are a starting point for the class. It is important to talk through each one with students and ask them to provide an example or paraphrase the norm. The purpose of this is to develop a shared understanding of each norm. Also, provide opportunities for students to clarify a norm, ask for a modification, or develop a new norm. Allow students to write on their handouts if the class decides to change something. Norms are intended to be shared by the students and teacher, so even though a set has been provided, it is just a starting point.

*ATTENDING TO EQUITY

Universal Design for Learning: It is important to use this norm-building time to begin to cultivate an equitable learning community that promotes trusting and caring relationships that foster student engagement. The norms should remind students to value the diversity of classroom community members and equity in the sensemaking work they will do together this school year. It is critical that the norms support safe and fair participation and interrupt cultural norms or stereotypes that could make science experiences feel uncomfortable to students (e.g., being someone who is not intelligent).
Revisiting Norms with Intention

7 · ESTABLISH SHARED NORMS

MATERIALS: Science Classroom Norms, science notebook, scissors

Introduce the idea of coming to consensus as a class. Tell students introducing the consensus task before talking about classroom members of the learning community to agree and how we work.

Introduce science classroom norms. Tell students that before for how the class wants to work and learn together. You may use a way of communicating to students that they were already exposed.

Display slide K and pass out the handout Science Classroom Norms.

Remind students that in prior units we have used norms to help to rules but are intended to ensure that all students have a position.

The norms on the handout and the slide are a starting point for them to provide an example or paraphrase the norm. The purp

poses for students to clarify a norm, ask for a modification class decides to change something. Norms are intended to be just a starting point.

6 · JIGSAW FEEDBACK GROUP DISCUSSION

MATERIALS: science notebook, jigsaw feedback sheets

Discuss norms for giving and receiving feedback. Norms are especially important when giving and receiving feedback. Norms are the following:

- We critique ideas, not people.
- We encourage other voices that have a different perspective.

Say, “These are all important to help us learn from.

Self Assessment: Giving Feedback

How well did you give feedback today?

<table>
<thead>
<tr>
<th>Today, I...</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gave feedback that was specific and about science ideas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared a suggestion to help improve my peer’s work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used evidence from investigations, observations, activities, or readings to support the feedback or suggestions I gave.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

One thing I can do better next time when I give feedback is:

Self Assessment: Receiving Feedback

How well did you receive feedback today?

<table>
<thead>
<tr>
<th>Today, I...</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read the feedback I received carefully</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asked follow up questions to better understand the feedback I received</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Said or wrote why I agreed or disagreed with the feedback</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revised my work based on the feedback</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What is one piece of feedback you received?
Sometimes students might be directed to choose a norm they want to work on individually.

Say, Remember, one of our norms is that we work together to figure things out, and it is OK if we are unsure at this point. It doesn't matter if our original claim is right or wrong, right now it is important for us to determine what evidence we need to collect in order to support or refute our claims. We can always change our claims if we need to as we gather more evidence. That's what scientists do!
Fostering Belonging with Classroom Norms

Resource #9 in the collection
Guidelines for Watching Videos of Teaching

● These are real classrooms-teaching and the classrooms we will see are complex.

● Ground rules:
  ○ There is much we do not know about the students and teacher and their history together.
  ○ Presume positive intentions and expertise on the part of the teacher.
  ○ Assume what the kids are saying makes sense to them.
  ○ Focus on how the classroom talk (teacher and students) is serving the learning goals of the lesson and the science and engineering practices involved.

Norms-on-the-Go

Alone Zone
In each of the following classrooms

● What caused the teacher to redirect students’ attention to the norms?

● How did the teachers help students connect the need to attend to the norm(s) to *sensemaking*?

● What might you do the same and/or different (with the benefit of thinking time)?
Norms-on-the-Go

Student 2: What if it means that... (inaudible)

Play video 1:30 - 2:25
Teacher: Interesting. Those seem like different ideas. Right. And that’s interesting and puzzling too, right?

Play video 1:11 - 2:18
Norms-on-the-Go

Student, you want to grab a stool from the table?

Play video 6:51 - 8:19
Norms-on-the-Go Teacher Reflections

Small Groups
What pattern(s) emerge across the three classrooms with respect to attending to norms “in the moment?”

- What caused the teacher to redirect students’ attention to the norms?
- How did the teachers help students connect the need to attend to the norm(s) to sensemaking?
- What might you do the same and/or different (with the benefit of thinking time)?
Norms-on-the-Go - Teacher Reflection

Play video 2:27 - 3:02
Kate Soriano
NSTA Standards Implementation Specialist
ksoriano@nsta.org
Together, we are NSTA.

Please review this session.