



SCIENCE EDUCATORS SESSION 2: A Tale of 2 Classrooms



Illinois Science Capacity Builders Series

CONTEXT, INTRODUCTIONS, and ROLES:



Synchronous virtual sessions, Asynchronous virtual sessions (spring 2026), Face to Face Session (June 2026). All professional learning supported by funds through the Illinois State Board of Education.

IL SCIENCE STEERING COMMITTEE

Meagan Budke, ISBE

Anji Garza, PD & Ed Service Director, ROE 47 (Tech, Chat)

Heather Galbreath, 6th Grade Science Teacher Galesburg, IL

Brian Gibbs, Educator, Bradley School District 61

Sarah Meador, Director of ROE Services, ROE 8

Dawn Novak, Professional Learning Designer, Northwestern University

Nate Nugent, High School Science Teacher, Streator, IL

Kristin Rademaker, Professional Learning Specialist, NSTA

Misty Richmond, Middle School Science Teacher, CPS

Richard Stokes, University of Illinois - Springfield

Nicole Vick, Curriculum Developer, Northwestern University

You! Breakout Participant, Speaker



Purpose & Desired Outcome



To deepen your understanding of the Illinois Science Standards, build your capacity to teach science, and support greater student success.

Desired Outcome



By the end of this meeting we will have:

- Examined and compared two contrasting classroom scenarios to identify key features of effective, student-centered science instruction.
- Discussed how students engage with phenomena and make sense of the world through science and engineering practices.
- Distinguished between traditional, teacher-directed lessons and those that promote curiosity, questioning, and evidence-based reasoning.
- Clarified what three-dimensional, standards-aligned science instruction looks like in practice.
- Collaboratively developed a shared vision of high-quality science teaching and identified practical strategies to bring into our own classrooms.

Participant Guidelines

Cameras on if possible

Participate though chat, hands up feature, and breakout sessions

Resist the temptation to multitask

Take care of your own needs

Please rename yourself and include your grade level. e.g. 2nd Grade, Anji Garza.

Features to Support Student Sensemaking

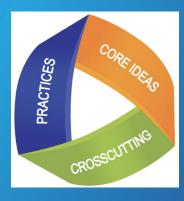
Supporting Student Sensemaking in OpenSciEd



Feature	Description
Phenomena Based Centered around figuring out phenomena or solving problems	 Students' work is anchored in meaningful phenomena or problems that motivate building ideas over time. Anchoring phenomena and problems are complex, relevant, and returned to as we figure out more. Students investigate related phenomena to figure out pieces of the explanation Assessments ask students to make sense of specific and compelling phenomer using their understandings built during the unit.
Coherent for Students Driven by students' questions and ideas	 Students' prior ideas and understandings are elicited, valued and built upon. Students and teachers work together to figure out where to go next and what evidence is needed to answer their questions. Students understand what they are doing and how it will help them answer questions about a larger phenomenon or solve a problem. Students engage in science and engineering practices in meaningful ways in order to make progress on their questions.
Driven by Evidence Incremental building and revision of ideas based on evidence	 Students' ideas and questions determine what evidence to collect. Students seek and use evidence to figure something out as they build and revision their explanations, models and arguments. Investigations provide evidence to build new science ideas instead of confirming pre-taught ideas. Evidence can be used to problematize our current thinking and help us think about where to go next.
Collaborative WE figure out ideas together	 Students have opportunities to use, build upon, and critique other's ideas. Students use evidence to support ideas, ask for evidence from others and suggest ways to get additional evidence. Students have several opportunities to give and get feedback The culture of the classroom supports risk-taking and changing our minds.
Equitable Requires a classroom culture that values all ideas	 Students have multiple opportunities to make sense individually and through small and whole group discussions. The class community values the diversity of resources students bring to science class, including language, gestures, metaphors, and various modes of expression. Norms are established and revisited to support equitable sensemaking. Teachers integrate a variety of assessment activities to elicit, interpret, and provide feedback to build from students' diverse ideas and experiences. Students understand how and why what they are learning is relevant to their own lives and their communities.

Individually:

 Read "supporting student sensemaking" resource



Reflecting on Questions and Challenges



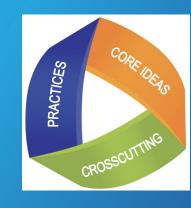
- Phenomena-based
- Coherent for students
- Driven by evidence
- Collaborative
- Equitable

Individually: Reflect on challenges/questions related to the Key Features. Write each on a separate post-it note in our shared slide. Write at least 3-4 post-its.

Small Group: Share some of your questions and challenges with your group.

Vignettes: What/who is driving instruction?

- **Individually** read 2 vignettes from two units on carbon cycling. Silently reflect on your answers to the following questions:
 - Where (and who) do the questions come from?
 - If you asked a student in each of these classrooms during Lesson 3, What are you doing and why?
 - How would their responses be similar?
 - How would their responses be different?

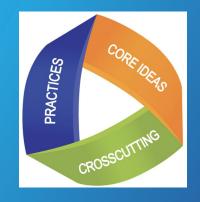


Vignettes: What/who is driving instruction?



In breakout groups discuss:

- Where (and who) do the questions come from?
- If you asked a student in each of these classrooms during Lesson 3, What are you doing and why?
 - How would their responses be similar?
 - How would their responses be different?
 - Be ready to share your ideas with the whole group when we return.



Guidelines for Watching Videos of Teaching

- These are real classrooms
- Ground rules
 - Assume there are many things you don't know about the students,
 the classroom and the teacher including their shared history.
 - Presume expertise on the part of the teacher.
 - Assume what the kids are saying makes sense to them.
 - Focus on how what the teacher and students are doing is serving the learning goals of the lesson and the key features.

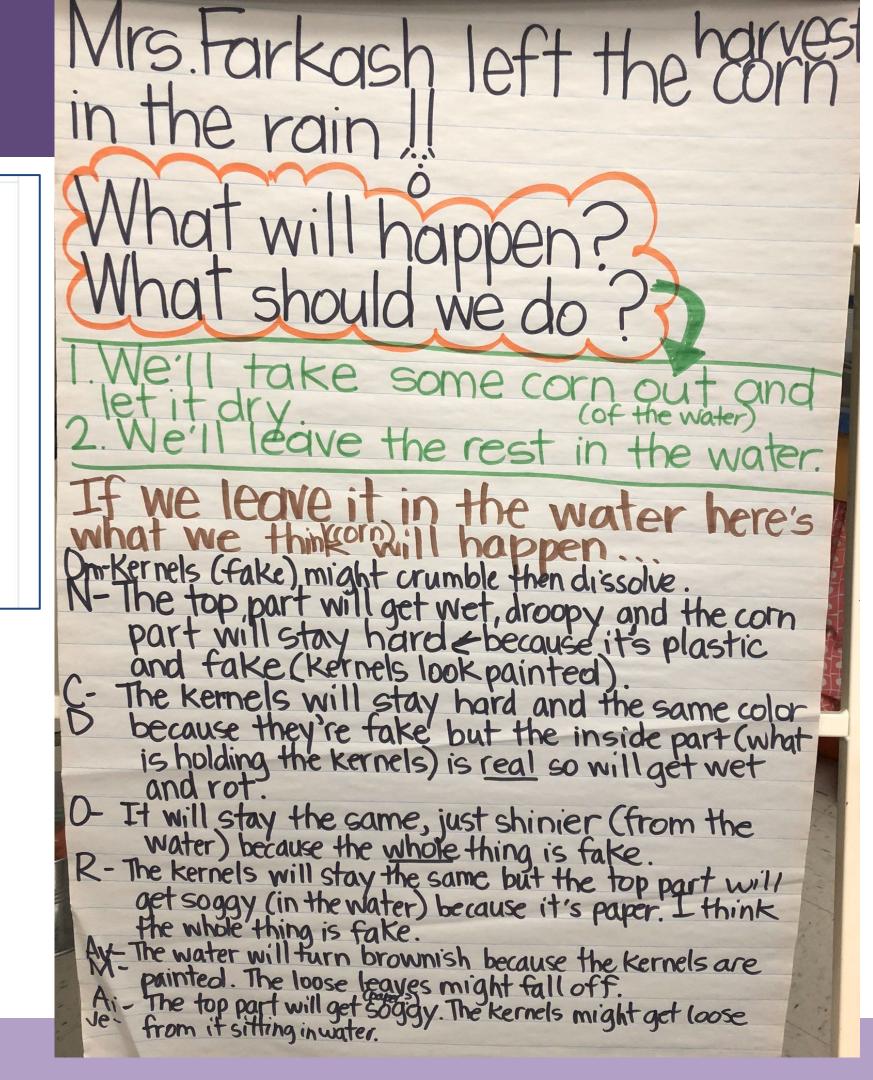
^{*}Adapted from: Classroom Discussions: Seeing Math Discourse in Action, Grades K–6. A Multimedia Professional Learning Resource and the Next Generation Science Exemplar Program (NGSX)

Why Is Our Corn Changing? (Grade 2): Anchoring Phenomenon



Oh no! Mrs. Farkash accidentally left the Harvest Corn , which we observed & deemed most likely be fake, out in the rain! No worries, these scientists decided to use it as an opportunity to determine if the is real or fake! Check out our plan & what we think may happen...





Elementary

2nd Grade Classroom

Investigating some harvest corn after the teacher shared that some of her harvest corn started sprouting after it got wet!!

Individually: As you watch the video reflect on what key features you are noticing in this classroom.

Small Group: Share some of your noticings and add them to your shared space for your group number.





Middle School



8th Grade Science Classroom

Investigating what is going on inside our bodies Lesson 9 in the unit





Individually: As you watch the video reflect on what **key features** you are noticing in this classroom.

Small Group: Share some of your noticings and add them to your shared space for your group number.

High School



10th Grade Science Classroom

Investigating what is causing oyster populations to be going down in the Pacific NW.

Lesson 1

Individually: As you watch the video reflect on what key features you are noticing in this classroom.

Small Group: Share some of your noticings and add them to your shared space for your group number.



Features to Support Student Sensemaking Across the Grade Levels





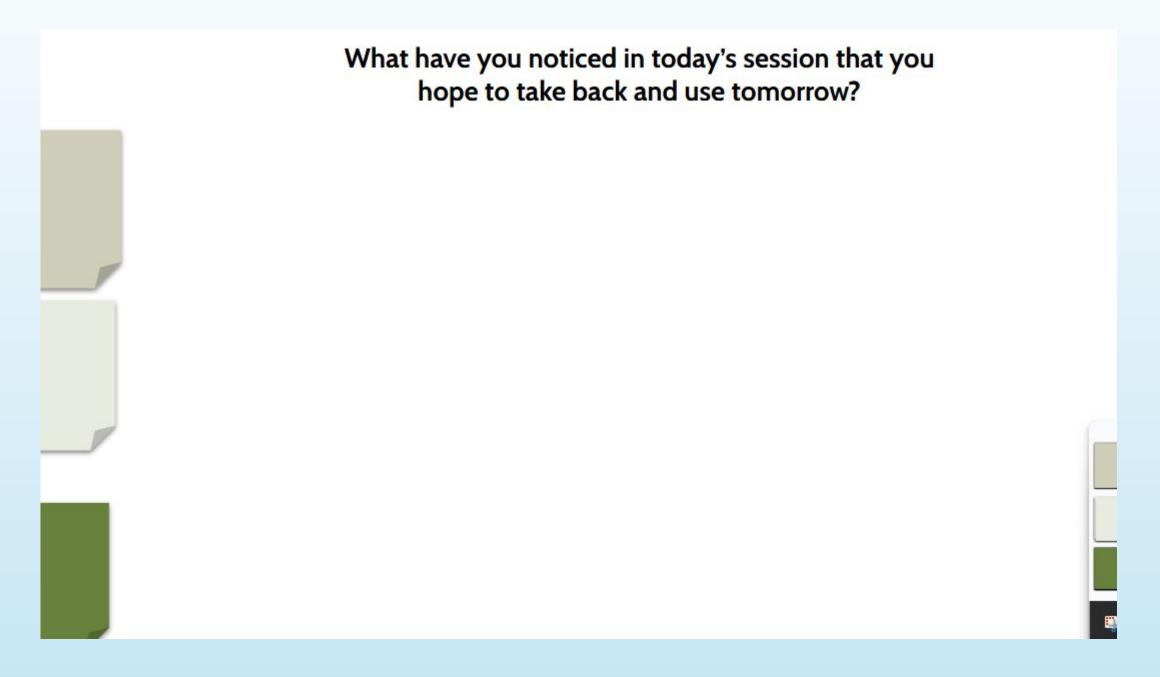


Whole Group: What similarities and differences did you notice in the key features of sensemaking across the different grade levels?



- Phenomena-based
- Coherent for students
- Driven by evidence
- Collaborative
- Equitable

What have you noticed in today's session that you hope to take back and use tomorrow?



Individually: Add something you noticed today that you can take back to your classroom and use tomorrow.



What questions do you have?

What do you want more of in future sessions?

What do you want less of in future sessions?

Individually: What do you want to explore further in future sessions? What do you need more of? Less of? Share your thoughts on our shared slides (slide 3), linked in the chat.

Next Steps

 Follow up email from Anji Garza, includes slides, agenda, and video recording

• Encourage your teachers to attend the educator sessions each month.

Join us for the next session!

 Complete the Science Survey and share with teachers.



SCIENCE LEADERSHIP SESSION: WHAT SHOULD HIGH-QUALITY SCIENCE EDUCATION LOOK LIKE?

Join us for a 1.5-hour virtual session aimed at educational leaders focused on enhancing science instruction. Participants will explore high-quality science education through a case study and learn about necessary systems and supports.

During the session, attendees will:

- Examine three-dimensional, phenomenon-based science instruction components.
- Analyze a classroom case study to identify effective teaching indicators.
- Use the NSTA Walk-Through Tool to observe and reflect on science instruction.
- Discuss how leadership decisions impact science education quality.
- Collaborate on actionable steps to support teachers and students.

This workshop offers a practical framework for promoting excellence in science education and is provided at no cost through a partnership with the Illinois State Board of Education.

MONDAY, NOVEMBER 17TH 9:00 - 10:30 A.M. ZOOM







Join us for an engaging 1.5-hour virtual session designed for educational leaders who are passionate about strengthening science instruction across their schools and districts. Through a rich case study, participants will explore what high-quality science education looks like in practice and what systems and supports are needed to make it a reality.

During this interactive session, we will:

- Examine the key components of three-dimensional, phenomenon-based science instruction.
- Analyze a real classroom case study to identify indicators of effective teaching and learning.
- Use the NSTA Walk-Through Tool, grounded in the Sensemaking Tool, to practice observing and reflecting on science instruction through a leadership lens.
- Reflect on how leadership decisions—such as professional learning design, curriculum adoption, and assessment practices—shape the quality of science education.
- Collaborate with peers to envision actionable next steps for supporting teachers and students in developing deep, meaningful science understanding.

This session provides a practical framework and shared language for recognizing and promoting excellence in science education—empowering leaders to guide their schools toward more equitable, engaging, and standards-aligned instruction.

This workshop is provided at no additional cost through a partnership with the Illinois State Board of Education.

To register:

https://forms.fillout.com/t/eGfXMqJE19us?workshopid=recSBsQ0xfihHZhXu



A TALE OF TWO CLASSROOMS: WHAT SHOULD SCIENCE LOOK LIKE? NOVEMBER 10 | 4:00 - 5:30 P.M. | ZOOM

What does high-quality science teaching really look like in action? In this interactive session, teachers will compare two contrasting classroom scenarios to uncover the key features of effective, student-centered science instruction.

Together, we'll explore:

- How students engage with phenomena and make sense of the world through science and engineering practices.
- The differences between traditional, teacher-directed lessons and classrooms that foster curiosity, questioning, and evidence-based reasoning.
- What it means for instruction to be three-dimensional and aligned to today's science standards.

Through video analysis and collaborative discussion, participants will build a shared vision of what powerful science learning looks and feels like—and identify strategies they can bring back to their own classrooms the next day.





HOW DO I GET THERE FROM HERE? NOVEMBER 17 | 4:00 - 5:30 P.M. | ZOOM

You know what high-quality science instruction should look like—now it's time to make it happen. This session focuses on the how: the concrete steps teachers can take to move their instruction toward more authentic, threedimensional learning experiences.

Participants will:

- Reflect on their current practice and identify growth areas using the vision from Session 1.
- Explore strategies for engaging students in meaningful sensemaking through phenomena and inquiry.
- Learn how to scaffold learning without losing rigor or curiosity.
- Using data and standards knowledge to determine next steps and measure progress.
- Develop an actionable plan for trying out one or two key shifts in their own classrooms.

Whether you're just starting your journey or already experimenting with new approaches, this session will help you connect where you are now to where you want your science instruction to be—one lesson at a time.







UPCOMING HAPPENINGS AT ISTA!

Together, we're shaping the future of science education in Illinois—stay in the loop with the latest news, events, and educator highlights from across the state.

WE PROVIDE LEARNING OPPORTUNITIES



SCIENCE IN THE SOUTH CONFERENCE

Friday, March 6th 2026 John A Logan College Carterville, IL



ANNUAL CONFERENCE 2026

Monday, October 5, 2026 Northern Illinois University Conference Center, Naperville, IL



WANT TO PRESENT OR HOST AN EXHIBIT?

Be sure to check our website in January or reach out to abigail.trefilek@ilscience.org to be notified when proposals are open!

Stay in Touch with ISTA!











Science Professional

Learning in Illinois

SURVEY CLICK HERE





Meeting Evaluation







THANK YOU!