

Best Practices Tool 5: Sharing Information

Learning Goal

Identify forms of pollution, effects and relationships between pollutants and human actions.



Origin Lesson

Learning About (What)

Neighborhood Patrol

Ask students to imagine what life would be without clean air. Ask students to list as many things as they can that might make the air and water unsafe. Take students on a walk outdoors to look for examples of pollution. Ask students, what kinds of plants or animals could be affected? Ask, what might have caused each form of pollution? How did the litter get on the ground? How did oil get on the pavement? Have students record their answers. Back inside, students draw pictures of the pollution. Look through magazines for more examples of pollution. Have students take turns putting their examples into categories on a large poster board. Ask these questions to the students: do any of the same items appear in both categories? If so, do you agree with where those items are placed? Can people always see, hear, or smell pollution? Ask students how each could be prevented? Finally, have the discussion that we can't prevent all pollution.

Share Information Tools

SHARE INFORMATION In GROUPS Tool



Dialogic-authoritative dimensions of discourse on an interactive–non-interactive continuum (adapted from Mortimer & Scott, 2003, p. 35).

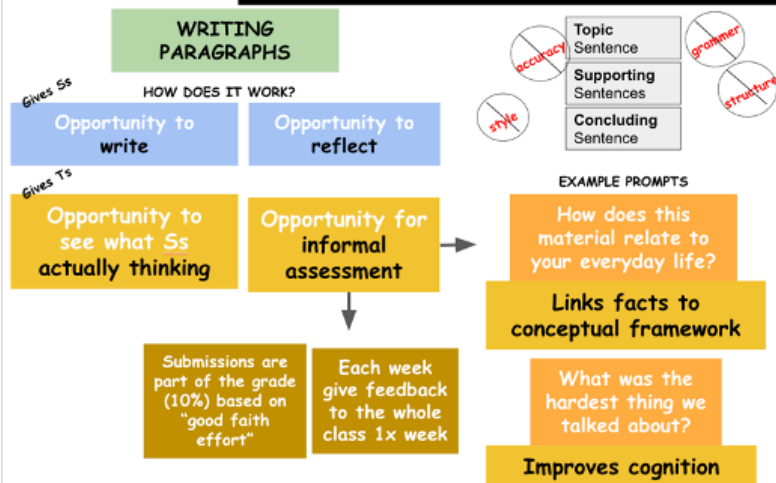
Best Practices Modified Lesson

Figuring Out (Why and How)

The social aspects of science are rarely explicitly taught, and yet, sharing information is at the core of what science is all about. Using convincing evidence and arguing from evidence is what moves our understanding of the natural world forward. Students need to be taught how to communicate what they know, otherwise, new information cannot be assimilated.

Use any or all the **Share Information** routines in your lessons. The routines focus on 4

SHARE INFORMATION In GROUPS Tool



SHARE INFORMATION In GROUPS Tool

Tips to include voices

Anti-Proximity

When a student responds, move AWAY. Walk to the far side of the room. Now the conversation includes all of the students between the you and the student talking.

Body Language

Position your shoulders to open up and lift back toward the whole class rather than one student. Keep your head up as if you're looking at the far side of the room and scan the entire room will help signal to the students they are all expected to stay in the conversation.

Anonymous Input

Having a voice, sharing perspectives, externalizing thinking does not need to be traditional. Allow students to participate anonymously. [NearPod](#) - open ended and single/multiple response platform. Use of *Post-its* is also encouraged.

Thinking Routines

Think-pair-share and jigsaw routines allow for smaller group contribution where students feel more secure in sharing. Also, fishbowl triad discussion strategy is effective. Group students in 3 as they prepare for discussion. During actual discussion, there is an inner circle with only 1 rep from each triad. Students may tap in and out.

approaches of obtaining, evaluating, and communicating information. Some routines you* do to set the culture of shared ideas, others the students** use to help give them voice:

- *your teaching style
- *include everyone's voice
- *productive educator talk moves
- **communicate through writing

The lesson above is a barrage of IRE (Initiate, Response, Evaluate) exchanges between the educator and the students. It is a ping-pong game of talking. Instead, include the Productive Talk Moves Tool to turn this lesson into a volleyball game, where the students are engaged with one another rather than the educator.

Let the students ask the questions of each other by adopting a Dialogic/Interactive class culture. Include fewer, closed-ended questions. Ask Why and How rather than What questions. Maybe just 2 questions that cannot be answered quickly but require students to naturally think about more questions as they figure out their claims. For example, "how does pollution affect how animals survive in their space?" This open question will lead to all sorts of rich, inquiry-based investigations, modeling, evidence collecting, and explaining.

Productive Talk Goals and Moves Tool	
<p>Goal One: Help individual students <u>share, expand and clarify their own thinking</u></p> <ol style="list-style-type: none"> 1. Time to think: Partner talk, writing as think time; wait time. 2. Say more: "Can you say more?"; "What do you mean by that?"; "Give an example." 3. So, are you saying...?: "So, let me see if I've got what you're saying. Are you saying ... " (always leaving space for the original student to agree or disagree and say more). 	<p>Goal Two: Help students <u>listen carefully to one another</u></p> <ol style="list-style-type: none"> 4. Who can rephrase or repeat?: "Who can repeat what Jason just said or put it into their own words?" (After a partner talk) "What did your partner say?"
<p>Goal Three: Help students <u>deepen their reasoning</u></p> <ol style="list-style-type: none"> 5. Asking for evidence or reasoning: "Why do you think that?" "What's your evidence?" "How did you arrive at that conclusion?" 6. Challenge or Counterexample: "Does it always work that way?" "How does that idea square with Sonia's example?" "What if it had been a copper tube instead?" 	<p>Goal Four: Help students <u>think with others</u></p> <ol style="list-style-type: none"> 7. Agree/Disagree and Why?: "Do you agree/disagree? (And why?)" "What do people think about what Ian said?" "Does anyone want to respond to that idea?" 8. Add on: "Who can add onto the idea that Jamal is building?" "Can anyone take that suggestion and push it a little further?" 9. Explaining what someone else means: "Who can explain what Aisha means when she says that?" "Why do you think she said that?"
Adapted from TERC (2012), Talk Science in the Inquiry Project.	

Prompting Notes

Implementing even one of the above best practices tools will build the culture of student discourse, and not just between them and you, but more importantly among the students. When you hear the word inquiry, and even more precisely the word scientific practices, it is **social AND cognitive** aspects of science that you are having your students engage in. **Sharing observations** and wonderings with one another, **questioning one another** and **corroborating information** are the pillars of scientific discovery and literacy.

Guiding Discussion Lessons/Questions

1. Share a lesson you teach that most closely reflects the *Dialogic/Interactive* space in the Share Information in Groups Tool (or from the Teaching Continuum).
2. Select a lesson you teach that is more reflective of the *Authoritative/Non-Interactive* space in the Share Information in Groups Tool (or *Traditional* from the Teaching Continuum), and redesign/discuss how you would make it more *Dialogic/Interactive*.

Additional Resources:

[Exploring the Science Framework. Engaging Learners in the scientific practices of obtaining, evaluating and communicating information.](#) NSTA Science Scope. November 2012 . By Philip Bell, Leah Bricker, Carrie Tzou, Tiffany Lee, and Katie Van Hone.

Talk Science Primer. TERC. 2012. By Sarah Michaels and Cathy O'Connor.

http://searkscience.pbworks.com/w/file/fetch/67803311/18-TalkScience_PrimerArticle.pdf