Promoting Discussion

How can we nurture discussion about science ideas in the outdoors?
“Talk is not an add-on... There is solid research and wide-spread agreement that academically productive talk is critical for learning in science.”

Talk Science Primer, 2012
Goals for the Session

- Learn the profound role discussion plays in the learning process, specifically in scientific meaning-making.
- Discuss interesting and challenging questions about discussion in education.
- Learn about a wide variety of discussion routines and strategies.
- Practice leading discussions, utilizing new tools and instructor moves.
Discussion and Workshop Norms

Listen actively and share ideas
Share and ask for evidence
Build on ideas of others
Keep an open, curious mind
Disagree respectfully to increase understanding
Pay attention to participation
Research shows (a):

Discussion

– promotes deeper reasoning
– reveals understandings and misunderstandings
– increases memory
Research shows (b):

Discussion

– promotes deeper reasoning
– reveals understandings and misunderstandings
– increases memory
– improves language development
– supports social skill development
– fosters community
– creates opportunities for mutual respect through sharing and exploring ideas
– builds self-confidence
Two Cents Routine:
1. Make groups of 4
2. Take turns sharing ideas in two rounds:
   a. First round (one cent): Each person in the group gets one minute (or less) to share their ideas on the topic.
   b. Second round (two cents): Each person in the group gets one minute to respond to what others have said.

Prompt:
Based on what you observed, what are some discussion elements that need to exist for successful meaning-making discussion? How might these elements influence your teaching?
Less Structured Discussion:
1. Make groups of 4
2. Discuss the prompt(s)

PROMPTS:
1. How did the instructor in this video respond to student responses and ideas?
Whip Around:

1. Think quietly to yourself about the prompt.
2. Then, in quick succession, each person responds to the prompt.

**Prompt:**

Think of two words, one that describes your experience participating in the *Two Cents* routine, and one that describes your experience participating in the *Unstructured Discussion.*
Think-Pair-Share:
1. Think about your response. Write or draw if you want.
2. Pair up and discuss with your partner.
3. Share out with the whole group

Prompt:
How does content delivery influence a discussion? When is it appropriate and when is it not appropriate to directly deliver content to students?
Productive Discussion
Steps toward Discussion

1. Culture of Discussion
2. Facilitation, Practice & Coaching
3. Productive Discussion
Discussion Goals

1. Ignite curiosity
2. Help individuals share and expand on thinking
3. Help students listen
4. Help students deepen reasoning
5. Help students think with others
Discussion Goals and Talk Moves

Goal 1: Ignite curiosity
→ Ask broad or provocative question
→ Judiciously introduce interesting content

Goal 2: Help individuals share and expand on thinking
→ Time to Think
→ Say More
→ Provide example

Goal 3: Help students listen
→ Ask students to rephrase each others’ statements

Goal 4: Help students deepen reasoning
→ Ask for evidence
→ Provide counterexample

Goal 5: Help students think with others
→ Agree/Disagree
→ Add On
→ Explain thinking
Types of Science Discussions

• **Direct Engagement with Nature**
  – Using observations and making explanations based on evidence

• **Environmental Issues**
  – Discussing choices about human impacts and policy

• **Conceptual Development**
  – Building a better understanding of specific science concepts
# Using Routines

<table>
<thead>
<tr>
<th>Students need to practice:</th>
<th>Instructor Uses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paying attention to one another.</td>
<td>Tape Recorder Routine</td>
</tr>
<tr>
<td>Responding to each other.</td>
<td>2-Cent Routine</td>
</tr>
<tr>
<td>Sharing their ideas out loud.</td>
<td>Turn and Talk, or Think-Pair-Share</td>
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Discussion Map

• Ask a broad question.
• Listen to student responses. Accept responses neutrally.
• Ask for evidence and probe student.
• Ask for agreement/disagreement.
• Add content or ask a question leading back to the main topic.
Discussion Map Used in Our Discussion

• **Ask a broad question:** *How does content delivery influence a discussion?*

• **Ask for evidence and probe thinking:** *Why do you think delivering content might have a positive effect in that situation?*

• **Ask for agreement/disagreement:** *What do others think about that? Does anyone have a different opinion?*

• **Ask a question leading back to the main topic:** *When is it important not to deliver content directly to students?*
Coaching Students

**Example Habits**
- Disagreeing politely
- Using evidence
- Citing source
- Changing mind
- Asking someone else for evidence/source
- Asking a follow-up question

**Example Coaching Move**
“Did you notice how Edgar just changed his mind? That’s hard to do, but it’s important in science to be able to adjust our explanations when we find new evidence, or a better explanation.”
Most Common Challenges

1. Keeping kids interested and engaged
2. Addressing inaccurate ideas
3. Concluding the discussion
Discussion Lab Goals

• Goals:
  – Create a plan for leading a discussion with students
  – Practice leading this discussion with a group of adults
  – Experiment with various tools and strategies: instructor moves, discussion map, different types of questions, when to introduce content, how to conclude the discussion, etc.

Remember: There is no such thing as a perfect discussion. It’s just as important to figure out what doesn’t work as what does work.
Discussion Lab Format

1. Choose a discussion leader
2. Choose a topic to discuss (from the Planning Sheet, or make up another one)
3. Work in small groups to create a plan: choose a goal to work towards, and use the discussion map to help design the flow.
4. Leaders switch to a new group.
5. Choose one person to observe and take notes.
6. Discuss!
Discussion Lab Debrief

Which prompts were most successful for reaching the instructor goals? Which were less successful?
A Productive Discussion Requires:

• A worthy topic
• Students to
  – elaborate and clarify thinking
  – support ideas with examples
  – build on and/or challenge another’s ideas
  – connect different ideas or apply an idea to a new situation
• A conclusion that summarizes and draws together what’s been learned and provides a chance for reflection
River Rafting as a Metaphor for Discussion-leading
Practice Makes Experts

Not all practice makes perfect. You need a particular kind of practice—deliberate practice—to develop expertise. When most people practice, they focus on the things they already know how to do. Deliberate practice is different. It entails considerable, specific, and sustained efforts to do something you can’t do well—or even at all. Research across domains shows that it is only by working at what you can’t do that you turn into the expert you want to become.

-From The Making of an Expert by K. Anders Ericsson, Michael J. Prietula, and Edward T. Cokely
Reflection

- Take an honest, evaluative look at where you are in terms of questioning and discussion-leading skills.
- Make a plan for strategies you’d like to try out in your own deliberate practice and changes you’d like to make in your own teaching. Include some opportunities to reflect on the process.
Picture Credits

Slide 1: Craig Strang
Slide 2: Kevin Beals
Slide 4: Craig Strang
Slide 25: Kevin Beals
Slide 27: Jedda Foreman