

Promoting Discussion



How can we nurture discussion about science ideas in the outdoors?





“Talk is not an add-on...There is solid research and widespread agreement that academically productive talk is critical for learning in science.”

Talk Science Primer,
2012



Goals for the Session

- Explore the profound role discussion plays in learning, specifically in scientific meaning-making.
- Discuss interesting and challenging questions about discussion in education.
- Learn a wide variety of discussion routines and strategies.
- Practice leading discussions, using new tools and instructor moves.
- Explore how discussion strategies can make learning more equitable and inclusive.





Discussion and Group Agreements

Listen actively and share ideas.

Share and ask for evidence.

Disagree productively to deepen understanding.

Take space, make space.

Keep an open, curious mind.

Build on others' ideas.



Thought Swap



Science Learning Research:

Discussion

- promotes deeper reasoning.
- reveals understandings and misunderstandings.
- improves language development.
- increases memory.



Social-Emotional Learning Research

Discussion

- supports social skill development.
- fosters community.
- builds self-confidence.
- creates opportunities for mutual respect through sharing and exploring ideas.



Kids Discuss Discussion



Play video at:

<http://beetlesproject.org/resources/for-program-leaders/promoting-discussion>



Two Cents Routine:

1. Make groups of 4.
2. Take turns sharing ideas in two rounds:
 - First round (1 cent): Each person in the group gets 1 minute (or less) to share their ideas on the topic.
 - Second round (2 cents): Each person in the group gets 1 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?



Kids Discuss Decomposition



Play video at:

<http://beetlesproject.org/resources/for-program-leaders/promoting-discussion>



Less Structured Discussion:

1. In table groups, discuss the prompt(s).

PROMPT:

How did the instructor in this video respond to learner responses and ideas?



Dominoes:

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 *Less Structured Discussion*.

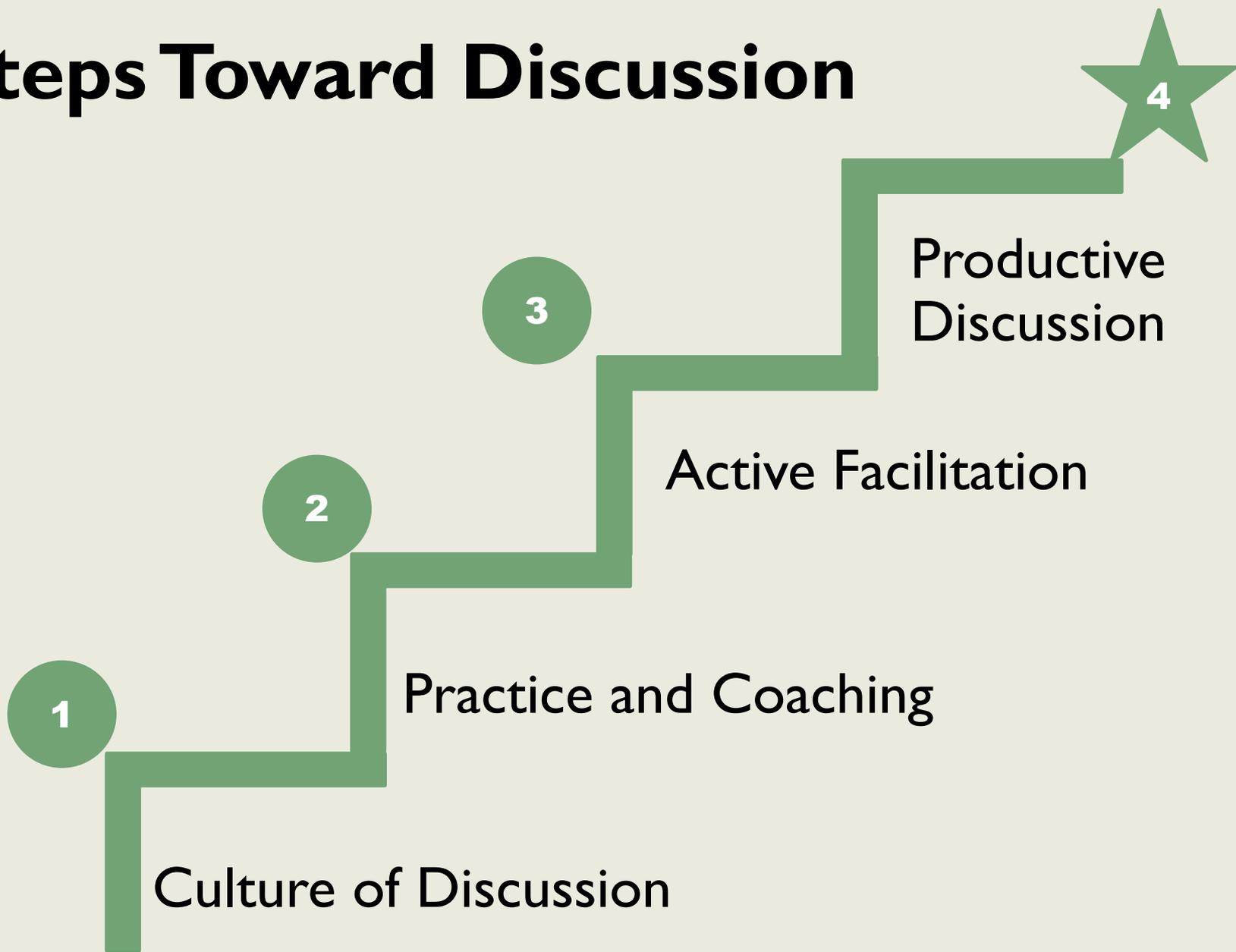




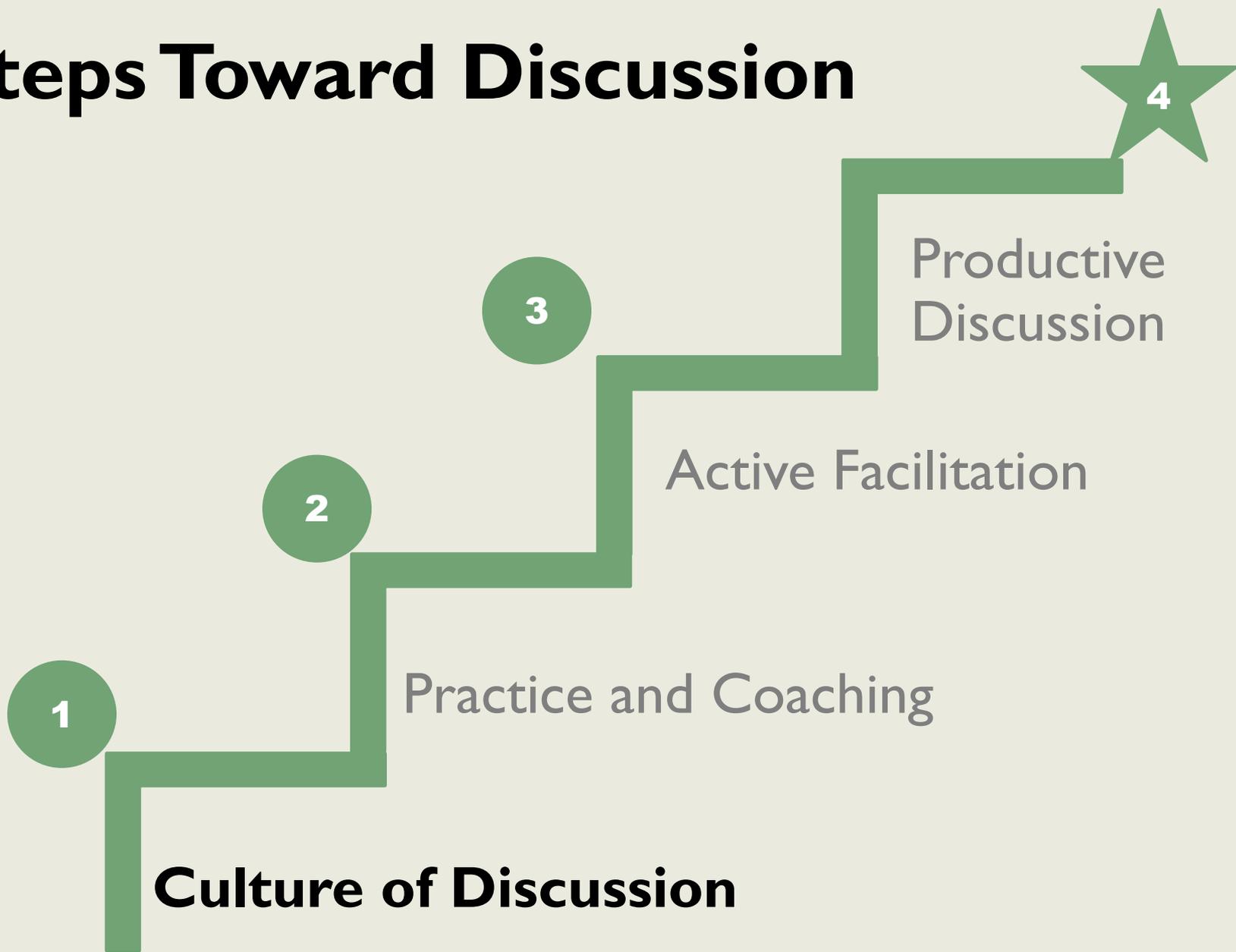
Productive
Discussion



Steps Toward Discussion



Steps Toward Discussion

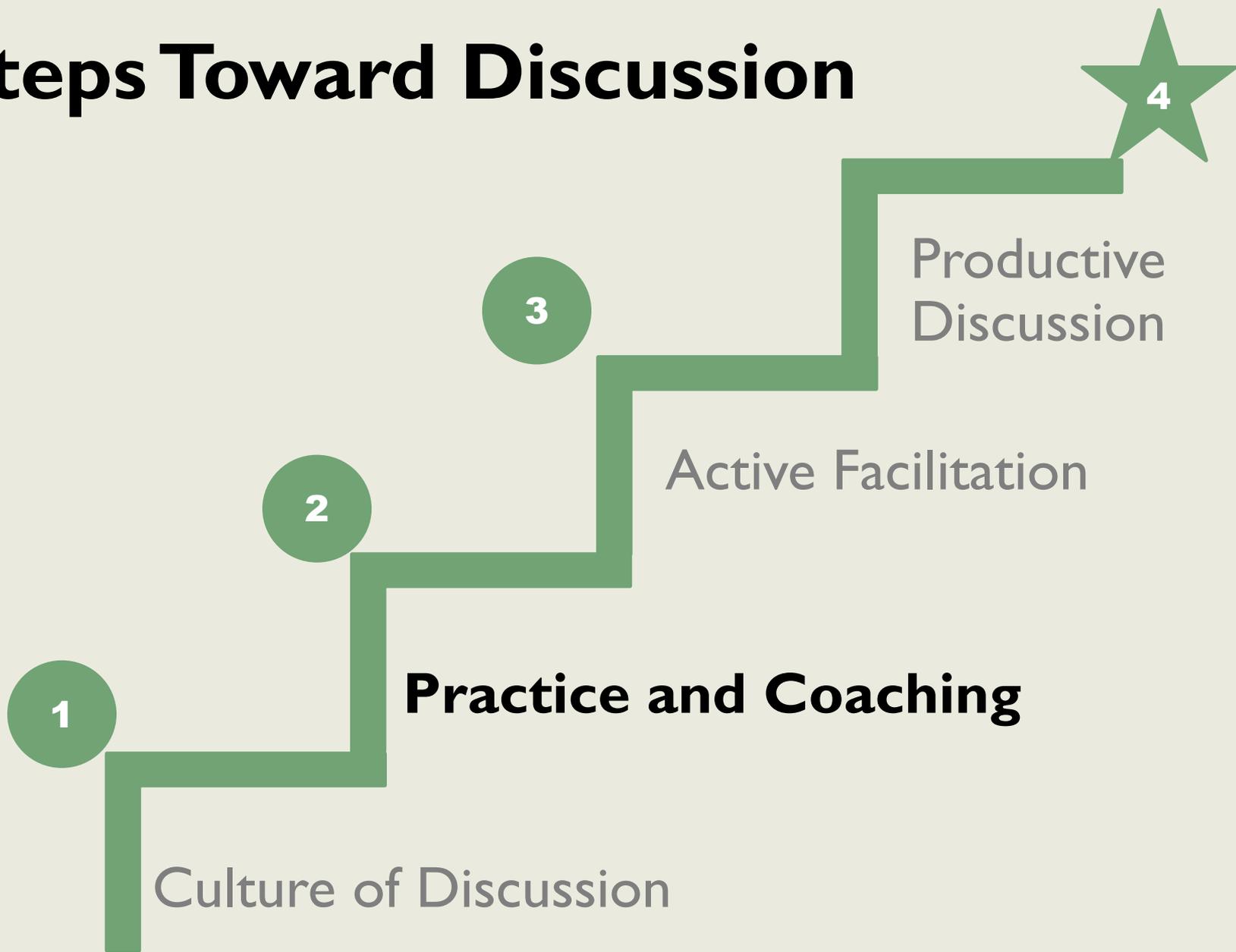


Some Ideas for Strategies to Help Create a Culture of Discussion

- Help learners understand that their opinions are valued and that there are a variety of acceptable answers to the questions asked.
- Engage with learners as collaborators.
- Model your own interest in the subject, including your own questions.
- Model and insist on respectful talk.
- Encourage participation from all learners, but don't require equal participation from all.
- Point out and model examples of productive discussion and science talk.
- Ask learners to periodically self-evaluate their discussions.
- Set up a “brave space” for risk-taking.
- Acknowledge your own biases and world views and the impact those may have on your group during discussions.



Steps Toward Discussion



Using Routines

Learners need to practice:	Routine(s):
Paying attention to one another.	<i>Tape Recorder</i>
Responding to one another.	<i>Two Cents</i>
Sharing their ideas out loud.	<i>Turn & Talk or Think-Pair-Share</i>



Coaching Learners

Example Habits

- Disagreeing respectfully
- 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.”



Steps Toward Discussion

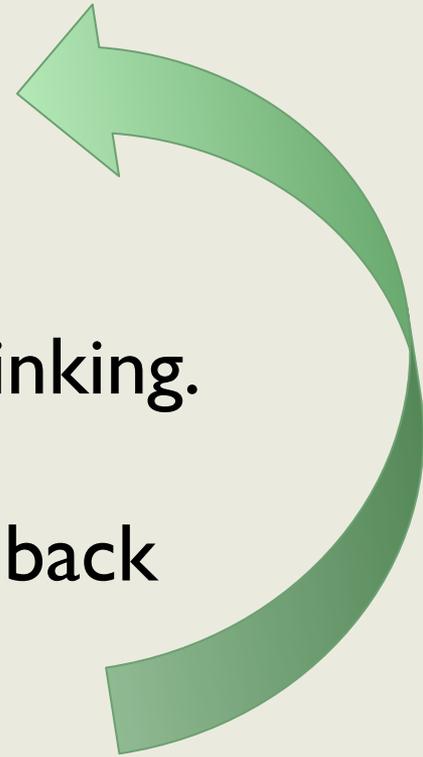


Discussion Map

- Ask a broad question.
- Listen to learner responses. Accept responses neutrally.
- Ask for evidence and probe learner thinking.
- Ask for agreement/disagreement.
- Add content or ask a question leading back to the main topic.

When ending:

- summarize main points and/or patterns.



Discussion Map Used in Our Discussion

- **Ask a broad question:**

Describe your experience participating in the Two Cents routine and the Less Structured Discussion.

- **Ask for evidence and probe thinking:**

Can anyone say a little bit more about your feelings about participating? What makes you say that?

- **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:**

How might your learners respond to this routine and this discussion?

- **Summarize main points and/or patterns:**

Can anyone summarize this discussion for us? What are the main takeaways?



Examples of How Unconscious Gender Bias Impacts Discussion

Teachers:

- spend up to 2/3 of their time talking to boys.
- are more likely to interrupt girls but allow boys to talk over them.
- tend to acknowledge girls' responses but praise and encourage boys' responses.
- spend more time prompting boys to seek deeper answers while rewarding girls for being quiet.
- direct their gaze toward boys more often, particularly after asking broad questions.

(Lavy & Sand, 2015; Lindberg, Hyde, Petersen, 2010; Sadker & Sadker, 1995 & 2010)



“Classroom studies document the fact that English learners, poor students, and students of color routinely receive less instruction in higher order skills development than other students. Their curriculum is less challenging and more repetitive... This type of instruction denies students the opportunity to engage in what neuroscientists call **productive struggle** that actually grows our brainpower.

As a result, a disproportionate number of culturally and linguistically diverse students are dependent learners.”

– Zaretta Hammond,
Culturally Responsive Teaching & the Brain



Ready for Rigor Framework

Awareness	Learning Partnerships
Information Processing	Community of Learners and Learning Environment

Developed by Zaretta Hammond
Culturally Responsive Teaching & the Brain



Discussion Goals

- 1. Ignite curiosity.**
- 2. Help individuals share and expand on thinking.**
- 3. Help learners listen.**
- 4. Help learners deepen reasoning.**
- 5. Help learners think with others.**

Adapted from *Talk Science Primer*—
The Inquiry Project



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 learners listen

- Ask learners to rephrase one another's statements

Goal 4: Help learners deepen reasoning

- Ask for evidence
- Provide counterexample

Goal 5: Help learners think with others

- Agree/Disagree
- Add On
- Explain thinking



Discussion Lab Goals

Goals:

- Create a plan for leading a discussion with learners.
- 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 *Discussion Lab Planning Sheet* or make up another one).
3. Work in small groups to create a plan: choose a goal to work toward and use the *Discussion Map* to help design the flow. (~5 minutes)
4. Leaders switch to a new group.
5. Choose one person to observe and take notes.
6. Discuss! (~7 minutes)



Discussion Lab Debrief

- Which prompts were most successful for reaching the instructor goals?
- Which were less successful?



Keys to Productive Discussion

- A worthy topic
- Learners
 - 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—Journal Writing

- Take an honest, evaluative look at where your skills are at in terms of your questioning and discussion-leading.
- 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.
- What in this session helped you to learned? What didn't?



Photo Credits

- Slides 1 and 2: The Lawrence Hall of Science
- Slide 4: Mark Thomas
- Slide 5: Kevin Beals
- Slide 24: photo is public content via Facebook
- Slide 32: Naomi Gardner
- Slide 34: Jedda Foreman

