

## TIPS FOR PROMOTING DISCUSSION

### Be Kind to Yourself

- **Discussions are messy.** It's impossible to lead a perfect discussion. There's always room for improvement, and there are also many different pathways you could take. Let go of the idea that a discussion should always end with a neat and tidy conclusion. Embrace the idea that learning is a process, and discussions are a forum for accurate and inaccurate ideas to be brought into the open and examined by the group, and for the instructor to learn more about what's going on in learner's minds.
- **Be self-evaluative, but be kind to yourself.** If you are new to leading discussions, and you find your first attempt disappointing, don't quit doing discussions! Just pat yourself on the back for effort, think, and talk about with others what you might do differently, and try again. It takes practice to be an effective discussion leader (but it's really worth it!). Don't be discouraged if discussions don't go smoothly at first. Learners need practice with discussion, and instructors need practice leading discussions.

### Nurturing a Culture of Respect and Curiosity

- **Introduce discussion norms and model respectful talk.** Discussion norms might include: *listen actively and share ideas; Use evidence; Keep an open mind; Share responsibilities; Disagree productively; Work toward a deeper understanding.* Learners need to feel safe, both from a fear of ridicule, as well as a fear of being "wrong." Learners should feel that what they think is valued by others and by their instructor.
- **Nurture a culture of intellectual curiosity.** Many learners are accustomed to education being a one-way delivery of information and need some modeling and coaxing to share the sorts of tentative questions and ideas that are involved in intellectual inquiry and discussion. They may also be afraid of admitting what they don't know in the presence of peers and especially leaders. Model your own interest in the subject, including your own questions and confusions. Show genuine interest in and acceptance for learner's contributions, and encourage other participants to do the same. Participate in conversations and investigations by actively trying to figure things out together as a fellow collaborator. You may also want to build on the conversational language styles used by your learners.
- **Encourage participation from all learners, but don't require equal participation from all.** Just because some learners aren't speaking doesn't mean they're not engaged. Some learners will happily talk in pairs, but will be reluctant to speak in a larger group. With some encouragement and a non-intimidating question you may get a quieter person to share, but by forcing participation you could embarrass them and turn them off.
- **Point out and model examples of productive discussion and science talk.** In order to help student learners improve their discussion participation skills, it's useful to point out examples when you or others model good discussion practices, such as asking for evidence, or building on someone else's idea. Encourage learners to politely monitor each other's discussion practices as well.
- **Have learners periodically self-evaluate their discussions.** After or mid-way in a discussion, you might ask the learners what aspects of discussion participation they have done well so far (see discussion norms above), and with which ones they could use some growth.

### Starting Small

- **Start out with mostly pair talk and work up to larger group discussions.** Talk in pairs is much easier for learners to participate in and also for instructors to manage. Start out with mostly pair discussion strategies, and work up to occasional whole group discussions, when you feel ready.
- **Give options.** Provide many opportunities for learners to talk in pairs and small groups to encourage peer-to-peer learning, as well as to help them prepare for whole group discussions. Break up large group discussions with *Turn & Talks*.

- **Mix discussion with activity.** Especially with children, mix up discussion with activity and other strategies. Just the act of moving to a different spot can re-invigorate learners.
- **Use rich experiences of learner-driven exploration of nature to develop science language and conceptual vocabulary.**

## Asking Questions

- **Plan thoughtful questions in advance, but, also, plan to improvise.** Small adjustments in phrasing can sometimes make or break a discussion question, so it pays to plan and be thoughtful with your questions. But many great questions are improvised on the spot. A great discussion-inspiring question is “gold,” so write them down when you find them, use them again, and share them with others. Ask engaging broad questions, and be ready to shift to another question if interest decreases. Try to figure out what is interesting to them. Try to find questions that have some “gray area” to make discussion interesting.
- **Accept and probe.** In general, give neutral accepting responses to learner statements, and ask other learners for their responses to other learners’ statements. Probe learners with follow-up questions to find out more what they are thinking.
- **Wait time.** Use wait time (pause ~3 seconds after asking a question before calling on learners) to allow more thinking and for more learners to chime in. Allow learners to struggle with questions and ideas, rather than immediately providing them with an answer.

## Guiding and Concluding the Conversation

- **Moderate, don’t dominate.** Attend to the group dynamics. Instructors need to balance offering guidance while also allowing learners to drive the discussion.
- **Keep discussion as learner-driven as possible.** Challenge students to respond to each other and grapple with each other’s questions. Avoid getting carried away with interjections of your own stories and perspectives.
- **Conclude the conversation by summarizing what has been discussed and by providing students a chance to reflect on their own learning.** Ask them to think about what surprised them, new questions they have, what has changed in their thinking, or to respond to the prompt: “I used to think...Now, I think...”

## Thinking Metacognitively

- **Make choices.** Many different strands can come up during a discussion, and you can’t pursue them all fully as a group. Although you want to make sure every idea is heard and acknowledged, the discussion leader can help keep the group focused by choosing which paths to spend more time pursuing with follow-up questions, and also when to cut off discussion, or to table it for later.
- **Seek out the edges of your own understanding.** Don’t be afraid when discussions steer towards topics and questions that you don’t fully understand. Let learners see you brainstorming and grappling with ideas. Engaging in authentic inquiry together makes you a “guide on the side.” Some educators may avoid discussing unfamiliar topics because they are afraid they will lose respect from their learners. When you take time to figure things out along side your learners, you actually gain their respect for being a curious and scientific thinker.
- **Pay attention to known common misconceptions and learners’ conceptual frameworks.** Knowing that most learners think soil is the main “ingredient” of trees can help you frame and guide a discussion about where the mass of a tree comes from, perhaps by bringing pivotal pieces of evidence into the discussion. Awareness of common misconceptions can also help you recognize and understand them in statements made by learners. Try to figure out their ideas and background knowledge. Ask, listen and probe.
- **If a discussion feels false, take the opportunity to reflect on what you’re actually trying to do.** It may be because the learners know that your real intention is delivering content, or trying to lead them to a specific answer. In those cases you may be pretending that it’s an open discussion, when you should probably just tell them what you want them to know.