

Lesson 10: Text-Based Discussion: Science Talk about Why Scientists Study the Rainforest



CCS Standards

- **SL.5.1:** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
- **SL.5.1a:** Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.
- **SL.5.1b:** Follow agreed-upon rules for discussions and carry out assigned roles.
- **SL.5.1c:** Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.
- **SL.5.1d:** Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.



Daily Learning Targets

- I can ask questions so I am clear about what is being discussed and to build my understanding of why scientists study the rainforest. (SL.5.1a, SL.5.1b, SL.5.1c)
- I can review the key ideas discussed and draw conclusions. (SL.5.1d)

Ongoing Assessment

- Participation in the Science Talk (SL.5.1a, SL.5.1b, SL.5.1c, SL.5.1d)
- Science Talk Notes and Goals (SL.5.1c, SL.5.1d)

Agenda

1. Opening

- A. Reviewing Learning Targets (5 minutes)

2. Work Time

- A. Preparing for a Science Talk (10 minutes)
- B. Conducting a Science Talk: Round I (15 minutes)
- C. Conducting a Science Talk: Round II (15 minutes)

3. Closing and Assessment

- A. Reflecting on Key Ideas and Drawing Conclusions (15 minutes)

4. Homework

- A. Accountable Research Reading. Select a prompt to respond to in the front of your independent reading journal.

Teaching Notes

Purpose of lesson and alignment to standards:

- In this lesson, students participate in a Science Talk to synthesize their learning about the rainforest from the first half of Unit 1 and answer the question: “Why do scientists study the rainforest?” This discussion will provide formative assessment data on students’ progress toward SL.5.1, which is formally assessed on the End of Unit 1 Assessment.
- Science Talks are discussions about big questions or scientific ideas. They allow students to collectively theorize and build on each other’s ideas. These talks provide a window into students’ thinking that helps teachers figure out what students really know and what their misconceptions may be.
- The structure of this Science Talk follows the Fishbowl protocol, with two concentric circles, one observing the other as they participate in the Science Talk. Rather than providing feedback to a specific student, students provide feedback to the whole group, for the whole group to learn.
- The research reading that students complete for homework helps build both their vocabulary and knowledge pertaining to the rainforest, specifically rainforest species and research. By participating in this volume of reading over time, students will develop a wide base of knowledge about the world and the words that help describe and make sense of it. Inviting students to share what they have been learning through independent reading holds them accountable.
- In this lesson, the habits of character focus are working to become an effective learner and working to contribute to a better world. The characteristic students are reminded of specifically is collaboration, as they have a collaborative discussion, and using strengths to help others grow, as they provide feedback on the Science Talk.

How it builds on previous work:

- Throughout Module 1 and this unit, students have worked in groups of varying sizes to discuss and share ideas with classmates. The Science Talk is a more formal and organized discussion, but it builds on the speaking and listening skills students have been practicing.
- Continue to use Goals 1 and 2 Conversation Cues to promote productive and equitable conversation.

Areas in which students may need additional support:

- Some students may find it challenging to speak aloud to the rest of the group and may require adult or peer support to say their ideas aloud.

Assessment guidance:

- Use the Grade 5 Collaborative Discussion Checklist to assess student participation in the Science Talk and provide feedback on students’ Science Talk: Notes and Goals (see Module 1 Appendix).
- Collect students’ Science Talk Notes and Goals note-catcher to add specific feedback for each student. Use your notes on the Grade 5 Collaborative Discussion Checklist to guide your feedback. This note-catcher will be returned to students at the beginning of Lesson 13 before they participate in the Science Talk for Part II of the End of Unit 1 Assessment.

Down the road:

- Students will continue to participate in Science Talks and will be formally assessed on SL.5.1 in the End of Unit 1 Assessment.

In advance:

- Prepare:
 - Participating in a Science Talk anchor chart (see supporting materials).
- Consider predetermining partnerships for the Science Talk.
- Review the Science Talk and Fishbowl protocols. See Classroom Protocols.
- Post: Learning targets, Working to Become Effective Learners anchor chart, and Working to Contribute to a Better World anchor chart.

Technology & Multimedia

- Work Times B and C: Consider audio or video recording the Science Talk to review with students afterward.
- Closing and Assessment A: Students complete their note-catchers in a word-processing document, such as a Google Doc, using speech-to-text facilities activated on devices or using an app or software such as Dictation.io (<https://dictation.io/speech>).

Supporting English Language Learners

Supports guided in part by CA ELD Standards 5.I.A.1, 5.I.A.3, and 5.I.B.5

Important points in the lesson itself

- The basic design of this lesson supports ELLs by providing opportunities to use oral language in a structured way. They will also receive helpful feedback. This will foster English language development as students struggle to communicate within an authentic and content-rich context.
- ELLs may find the participatory learning approach challenging, especially those who have received schooling in other cultures. As a result, some may be hesitant to participate. Reassure students that speaking up is the best way to learn, without putting them on the spot or forcing them to participate. Some students may also become stressed at the prospect of speaking in front of the group. Point out that making mistakes is an important part of learning. Consider including a norm saying there are no such things as mistakes when we try our best.
- As students leave for the day, make a point of thanking each one who said something during the Science Talk and congratulate each of them for taking the risk.

Levels of support*For lighter support:*

- Before Round I of the Science Talk, invite students to review and reflect on their log of errors (suggested in Lesson 5) and focus on one to correct as they participate. Remind students to ask themselves “Did that sound right? Did my classmate’s face show understanding or confusion? Did I use the appropriate verb tense?”
- Because formal language will be the norm for the Science Talks, have students categorize the differences between formal and informal language. Example:

formal

“Great point! The diversity of the rainforest is what keeps it alive.

mostly complete sentences

precise descriptions

very polite, friendly

informal

“You know, diversity. Cause it, like, helps animals live. And other stuff. Sweet, right?”

more fragments

Slang

polite, friendly

For heavier support:

- Model and think aloud the process of looking at a note-catcher, forming a coherent thought, and sharing the thought in formal Science Talk language. This will prepare students for the cognitive process of offering ideas throughout the conversation.
- For the Science Talk, review language for initiating discussions, politely taking a turn, and clarifying the conversation. (Examples: “That’s interesting because _____. I’d also like to add that _____.” “I didn’t hear your comment the first time. Can you please repeat it?”) (MME)
- Briefly review the meaning of key vocabulary from the unit. This will reinforce key words while preparing students to use proper terminology during the Science Talk. Students may write in or refer to their vocabulary logs.
- Prewrite observations on sticky notes and read them aloud to students when distributing them. ELLs who need heavier support can choose ones that they feel apply to the conversation they observe.

Universal Design for Learning

- **Multiple Means of Representation:** Students who may need additional support with receptive and expressive language will benefit from scaffolds to participate in the Science Talk. Consider offering visual sentence starters for them to reference. In addition, consider having students “practice” the specific roles for the Science Talk before beginning the exercise so that they can visually see how the activity will occur.
- **Multiple Means of Action and Expression:** Students who may need additional support with writing may benefit from prewritten sticky notes with common observations. This way they can focus on learning from their classmates and choosing the appropriate observation rather than facing a barrier with the writing.
- **Multiple Means of Engagement:** Build excitement about the Science Talk by reflecting on all the knowledge that the students have gained and how they now get to be experts, just like scientists. Consider sharing short biographies of famous scientists who study the rainforest to make the Science Talk more relevant to those who may not personally know a scientist.

Vocabulary

Key:

(L): Lesson-Specific Vocabulary

(T): Text-Specific Vocabulary

(W): Vocabulary Used in Writing

- *effectively, Science Talk, evidence (L)*

Materials

- ✓ Affix list (from Module 1; one per student)
- ✓ Vocabulary logs (from Module 1; one per student)
- ✓ Why Scientists Study the Rainforest: Preparing for a Science Talk note-catcher (from Lesson 9; one per student)
- ✓ Working to Become Effective Learners anchor chart (begun in Module 1)
- ✓ Participating in a Science Talk anchor chart (new; teacher-created; see supporting materials)
- ✓ Science Talk Notes and Goals (one per student)
- ✓ Sticky notes (three or four per student)
- ✓ Discussion Norms anchor chart (from Module 1, Unit 1)
- ✓ Working to Contribute to a Better World anchor chart (begun in Module 1)
- ✓ Grade 5 Collaborative Discussion Checklist (for teacher reference; see Informal Assessment Checklists Grades 3–5)

Opening

A. Reviewing Learning Targets (5 minutes)

- Direct students' attention to the posted learning targets and select volunteers to read them aloud:
 - “I can ask questions so I am clear about what is being discussed and to build my understanding of why scientists study the rainforest.”
 - “I can review the key ideas discussed and draw conclusions.”
- Tell students they will participate in a Science Talk today, and these targets will help them to effectively participate in it.
- Write the word **effectively** on the board.
- Using a total participation technique, invite responses from the group. Invite students to retrieve their **affix lists** if they need to:

“We have looked at this word recently when talking about summaries. What does effective mean?” (successful)

“What is the translation of effectively in our home languages?” (efektno in Serbian) Invite students to use their translation dictionary if necessary. Call on student volunteers to

share. Ask other students to choose one translation to quietly repeat. Invite them to say their chosen translation out loud when you give the signal. Chorally repeat the translations and the word in English. Invite self- and peer correction of the pronunciation of the translations and the English.

“Are there any affixes on this word? If so, what are they and how do they change the meaning of the word?” (The suffix is -ly. It makes an adverb from an adjective.)

- Record new words on the Academic Word Wall and invite students to record them in their **vocabulary logs**.
- Remind students that in this lesson, they will participate in a Science Talk and that they started preparing for this discussion in the previous lesson.

Meeting Students' Needs

- For ELLs and students who may need additional support with comprehension: Check for comprehension by asking students to summarize and then to personalize the learning targets. Ask:

“Can you put the first learning target in your own words?” (I can talk about science with my classmates.)

“How do you feel about that target?” (It might be a little hard, but it is interesting.) (MMR)

Work Time

A. Preparing for a Science Talk (10 minutes)

- Remind students that a Science Talk is a discussion about big or important questions scientists have. While scientists discuss these big questions with one another, it is important for them to create a set of rules, or norms, that they will all follow so everyone’s ideas can be heard and considered.
- Explain that before students can participate in the Science Talk today, they need to spend a few minutes reviewing the notes they made on their **Why Scientists Study the Rainforest: Preparing for a Science Talk note-catcher** in Lesson 9.
- Focus students on the **Working to Become Effective Learners anchor chart** and remind them specifically of the collaboration criteria. Remind students that because they will be working together to have a group discussion, they need to be conscious of working effectively with others.

Meeting Students' Needs

- For ELLs and students who may need additional support with expressive language: Encourage students to use nonverbal signals (e.g., signaling whether they agree or disagree using a green object or a red object). This may better enable students to process what their peers are saying. (MMR, MMAE)
- Build excitement about the learning targets by introducing some biographies of real scientists who study the rainforest. (MME)

Work Time

B. Conducting a Science Talk: Round I (15 minutes)

- Invite students to bring their Preparing for a Science Talk note-catcher and gather in the middle of the room. Organize students in a Fishbowl seating arrangement (a circle of students on the inside and a circle of students behind them on the outside).
- Direct students' attention to the **Participating in a Science Talk anchor chart**. Briefly review the anchor chart and answer any clarifying questions.
- Remind students that they will talk to each other about what they have been learning to answer the question: "Why do scientists study the rainforest?" Explain that this will not be the same kind of conversation that they might have on the playground or at other times during the day.
- Using a total participation technique, invite responses from the group:
"Why might this conversation be different?" (more formal, talking to each other like we would talk to an adult)
- Distribute the **Science Talk Notes and Goals** sheet.
- Ask students to find the first section of their note-catcher, Ideas and Questions. Tell them this is where they will take notes during the Science Talk if they think of an idea or question they would like to share while waiting their turn to speak.
- Distribute **sticky notes** to students in the outside circle to record observations of norms on the **Discussion Norms anchor chart**. Tell students that as they observe, listen, and take notes on what takes place in the first round of the Science Talk, they should record evidence of discussion norms on their sticky notes. Consider using the following prompts:
"What are two stars, or two things this group did really well?"
"What is one step, or one thing they could work on next time?"
- Be explicit that students are recording evidence demonstrated by the whole group, and that their comments should be kind, helpful, and specific so that the group can improve their performance in future class discussions.
- Model a brief example. Say: "Pay attention to the group you are observing and notice how they use the norms of discussion. You might write down something on your sticky note like: 'Most students used evidence from *The Most Beautiful Roof in the World* to support their thinking.'"
- Focus students on the **Working to Contribute to a Better World anchor chart** and remind them specifically of the using strengths to help others grow criteria, and of what this looks and sounds like.
- Explain that as students observe the Science Talk and make stars and steps notes on their sticky notes, they will be helping others to grow.
- Direct students to begin Round I of the Science Talk.
- If productive, use Goals 1 and 2 Conversation Cues to cue students to expand the conversation, give an example, listen carefully and seek to understand.

- As students discuss, use the **Grade 5 Collaborative Discussion Checklist** to monitor student progression toward the learning targets. Quickly redirect and support students as needed but avoid leading the conversation. Remind students that their questions and comments should be directed to one another, not the teacher.
- After 15 minutes, refocus whole group.

Meeting Students' Needs

- Consider thoughtfully organizing the groups so that students who may need additional support with expressive or receptive language participate in the inside circle during Round II so that they have a chance to observe their peer models during Round I. (MME, MMAE)
- For ELLs: Be clear that the language students use during the Science Talk is not more correct than informal communication or other dialects. Rather, it is language that is more appropriate for engaging in an academic conversation in English.
- For ELLs: Invite students to share kind, helpful, or specific comments in their home languages. (Example: "How would you say 'great point' in Spanish?") (gran punto)
- For ELLs and students who may need additional support with expressive language: Provide sentence frames for students to use as they participate in the Science Talk. Examples:
 - *"When I saw/heard ____, I learned ____."*
 - *"I wonder ____."*
 - *"I agree because ____." (MMR, MMAE)*
- For ELLs and students who may need additional support with comprehension: Before beginning the Science Talk, quickly demonstrate the student roles. Examples:
 - The inside circle language
 - Both circles' protocols
 - How to use the note-catchers and sticky notes (MMR)

Work Time

C. Conducting a Science Talk: Round II (15 minutes)

- Ask students to switch places with their partners so that those who were sitting in the outside circle are now sitting in the inside circle.
- Review the Discussion Norms anchor chart and invite students originally sitting on the outside of the circle to help you give feedback to the exiting group. Consider using the following prompts:
 - *"What are two stars, or two things this group did really well?"*
 - *"What is one step, or one thing they could work on next time?"*
- Discuss strategies that might help the next group be more successful in this area.
- Distribute several sticky notes to students in the outside circle so they can record stars and steps of discussion norms.
- Direct students to begin Round II of the Science Talk.

- As students discuss, use the Grade 5 Collaborative Discussion Checklist to monitor student progression toward the learning targets. Quickly redirect and support students as needed but avoid leading the conversation. Remind students that their questions and comments should be directed to one another, not the teacher.
- Focus students on the learning targets. Read each one aloud, pausing after each to use a checking for understanding protocol for students to reflect on their comfort level with or show how close they are to meeting each target. Make note of students who may need additional support with each of the learning targets moving forward.
- Repeat, inviting students to self-assess against how well they collaborated and used their strengths in this lesson.

Meeting Students' Needs

- For ELLs: As students interact, jot down samples of effective communication. Also jot down one or two common language errors (pervasive, stigmatizing, critical). Share each of these with the class, allowing students to take pride in the effective communication and correct the errors. (It's not necessary to identify who communicated well or who made errors. However, you might wish to pull the student aside to make it clear.)

Closing and Assessment

A. Reflecting on Key Ideas and Drawing Conclusions (15 minutes)

- Refocus students on the Science Talk question: "Why do scientists study the rainforest?"
- Invite students to turn and talk to an elbow partner:
"What key ideas did the group discuss to help answer this question?" (Possible scaffold: Say: "Recall that key ideas are the main ideas. They might be the ideas that came up multiple times, were voiced by multiple students, or were discussed for a long time.")
- Cold call students to share out. As students share, capture their responses on the board and invite students to record their responses in the Key Ideas box on their Science Talk Notes and Goals sheet.
- Invite students to turn and talk to an elbow partner:
"Thinking about the key ideas that were discussed, what conclusions are you now drawing in answer to the question? How would you answer the question now?"
- Invite students to record their ideas in the My Conclusions box on their Science Talk Notes and Goals sheet.
- After 10 minutes, refocus whole group.
- Direct students' attention to the Discussion Norms anchor chart.
- Invite them to turn and talk to an elbow partner:
"Referring to the criteria on the Discussion Norms anchor chart, what are two things you personally did well?"
"Referring to the criteria on the Discussion Norms anchor chart, what are two things you would personally like to do better during the next Science Talk or class discussion?"

- Invite students to record at least one goal in the My Goals for the Next Science Talk box on their Science Talk Notes and Goals sheet.
- Collect students' Science Talk Notes and Goals sheet. Tell them you will provide specific feedback to each of them in the My Teacher's Feedback box.
- Provide some general feedback that you noticed across the whole group.

Meeting Students' Needs

- For ELLs: Some students may need additional support to think of something that they did well because they might not have the language for it, or they may find it boastful. Reassure students that they have a reason to be proud of themselves. Give them kind and specific feedback to model such reflection and to boost their confidence. Allow students to rephrase the feedback with an "I" statement.
- Create a supportive and accepting classroom climate by emphasizing that everyone has goals that they are working toward, and each time we practice we get better. Note that scientists were not born knowing how to participate in scientific discussions. They had to learn and practice too. (MME)
- For students who may need additional support with fine motor skills: Include lines on the Science Talk Notes and Goals sheet to make it easier for students to write neatly. (MMR, MME)
- When completing the teacher feedback on the Science Talk Notes and Goals sheet, provide feedback that emphasizes individual effort, improvement, and achieving a standard rather than performance relative to other students. (MME)

Homework

A. Accountable Research Reading. Select a prompt to respond to in the front of your independent reading journal.

Meeting Students' Needs

- For ELLs and students who may need additional support with reading and writing: Refer to the suggested homework support in Lesson 1. (MMAE, MMR)