

Lesson 12: Text-Based Discussion: Science Talk about Animal Defenses



CCS Standards

- **SL.4.1:** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.
- **SL.4.1a:** 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.4.1b:** Follow agreed-upon rules for discussions and carry out assigned roles.
- **SL.4.1c:** Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
- **SL.4.6:** Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English when appropriate to task and situation.



Daily Learning Targets

- I can effectively participate in a Science Talk about animal defense mechanisms. (SL.4.1, SL.4.6)
- I can ask questions so I am clear about what is being discussed and to build my understanding of the topic. (SL.4.1, SL.4.6)

Ongoing Assessment

- Science Talk Notes and Goals (SL.4.1, SL.4.6)

Agenda

1. Opening

- A. Engaging the Reader: Connecting Key Vocabulary: Interactive Word Wall (10 minutes)
- B. Reviewing Learning Targets (5 minutes)

2. Work Time

- A. Preparing for a Science Talk (10 minutes)
- B. Conducting a Science Talk—Round 1 (15 minutes)
- C. Conducting a Science Talk—Round 2 (15 minutes)

3. Closing and Assessment

- A. Debrief (5 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 help them synthesize their learning about animal defenses from Unit 1 and to make progress toward SL.4.1, which is formally assessed in Module 3.
- 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. The students are paired, so one partner is in the inside circle and the other partner is in the outside circle. Consider intentionally partnering students in heterogeneous partnerships.
- This lesson opens with a vocabulary activity called Interactive Word Wall, sometimes called vocabulary concept mapping. In this activity, students make connections and explain relationships between different vocabulary words they have studied on a given topic. This helps them to better understand the meaning of the individual words and continue to build broader conceptual understanding of the topic (RI.4.4, L.4.4).
- In this lesson, the habit of character focus is working to become ethical people. The characteristic they are reminded of specifically is respect, as they will need to be respectful of one another when participating in the Science Talk.

How it builds on previous work:

- Throughout Module 1 and this unit, students have worked in groups of varying size to discuss and share ideas with classmates. This is a more formal and organized discussion, but it builds on the speaking and listening foundations students have already built.
- The research reading students complete for homework helps to build both their vocabulary and knowledge pertaining to animals and specifically animal defense mechanisms. By participating in this volume of reading over a span of time, students will develop a wide base of knowledge about the world and the words that help to describe and make sense of it.
- Continue to use Goals 1-3 Conversation Cues to promote productive and equitable conversation.

Areas where 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:

- Consider using the Grade 4 Collaborative Discussion checklist to assess student participation in the Science Talk in order to provide feedback on student Science Talk: Feedback and Goal Setting. See Informal Checklists Grades 3-5 (see Module 1 Appendix).

Down the road:

- Students will continue to participate in Science Talks and will be formally assessed on SL.4.1 in Module 3.

In advance:

- Prepare the Participating in a Science Talk anchor chart (see Supporting Materials)
- Review the Science Talk protocol (see Classroom Protocols).
- Prepare vocabulary word cards.

- Strategically place students into groups of four for Opening A.
- Post: Learning targets.

Technology & Multimedia

- Consider audio or video recording the Science Talk to review with students afterward.

Supporting English Language Learners

Supports guided in part by CA ELD Standards 4.I.A.1, 4.I.A.3, and 4.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 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 7) 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 a predicate with every subject I introduced?”

For heavier support:

- Encourage ELLs to take big risks during the Science Talk by telling them: “Today is our Science Talk. We are going to have a lot of fun. I want everyone to try to say at least one thing to the class. It can be scary, but I know you can do it. It’s okay to make mistakes. Just keep

talking. Making mistakes will help you become an even better English language speaker. Do your best!”

- 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.
- Remind students of the Science Talk model you and two students demonstrated in the last lesson. Ask: “Where else have you seen people talk formally about science?” (e.g., TV news, the zoo)
- Review language for initiating discussions and politely taking a turn in the conversation.
- 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 (MMR):** Students needing support with auditory processing or organizing their ideas may find it difficult to record ideas and questions *during* the Science Talk, even with supports provided. Consider having these students partner with a strong note-taker after the lesson to compare ideas and questions.
- **Multiple Means of Action & Expression (MMAE):** Students who struggle with auditory processing or organizing their ideas will benefit from the scaffolds suggested above for recording their ideas and questions during the Science Talk. In order for them to best use these supports, meet with them in advance to explain what they will need to do during the Science Talk and model where to write or draw, providing examples
- **Multiple Means of Engagement (MME):** Support sustained engagement and effort in this lesson by reminding students the goal for the work they are doing during the Science Talk. Many students benefit from consistent reminders of learning goals and their value or relevance. Students who may struggle with sustained effort and concentration are supported when these reminders are built into the learning environment.

Vocabulary

Key:

(L): Lesson-Specific Vocabulary

(T): Text-Specific Vocabulary

(W): Vocabulary used in writing

- effectively, Science Talk, evidence (L)

Materials

- ✓ Vocabulary word cards (one set per group of four)
- ✓ Interactive Word Wall directions (one for display)
- ✓ Animal Defense Mechanisms: Preparing for a Science Talk note-catcher (from Lesson 11; one per student)

- ✓ Participating in a Science Talk anchor chart (new; teacher-created; see supporting materials)
- ✓ Working to Become Ethical People anchor chart (from Module 1)
- ✓ Science Talk Notes and Goals (one per student)
- ✓ Sticky notes (three or four per student)
- ✓ Discussion Norms anchor chart (begun in Module 1)
- ✓ Grade 4 Collaborative Discussion checklist (see Module 1 Appendix)
- ✓ Equity sticks

Opening

A. Engaging the Reader: Connecting Key Vocabulary: Interactive Word Wall (10 minutes)

- Put students into groups of four.
- Distribute the **vocabulary word cards**.
- Explain that the purpose of this activity is to help students make connections between the meanings of vocabulary words related to animal defense mechanisms.
- Post or display and review the **Interactive Word Wall directions**.
- Read them aloud for the whole group and briefly model for students how to make and explain a connection. Think aloud:
“I am going to connect the word alert to the word escape, because if an animal is alert and hears a predator coming, it has time to escape.”
- Emphasize each step of the directions and be sure students understand that words can be connected in multiple ways.
- Give groups 10 minutes to make connections. If they finish early, encourage them to start again and try to make new connections with their words.
- Ask each group to share one connection they made between words and why. Ask:
“Why is it important for readers to make connections between words? How does it help us to become better readers?” (It helps us to have a deeper understanding of the meaning of the word and how it is used.)
- Select volunteers to share out.
- If productive, cue students to expand the conversation by giving an example:
“Can you give an example?” (Responses will vary.)

Meeting Students' Needs

- For ELLs: Predetermine the words and give students time to discuss with a partner what they will say during a protocol-based conversation.
- For students who may need additional support with reading fluency: Consider underlining or drawing a box around the vocabulary words in the learning targets to help struggling readers focus on those key words. (MMR, MMAE)

Opening

B. Reviewing Learning Targets (5 minutes)

- Direct students' attention to the posted learning targets and ask for volunteers to read them aloud:

“I can effectively participate in a Science Talk about animal defense mechanisms.”

“I can ask questions so I am clear about what is being discussed and to build my understanding of the topic.”

- Underline the word *effectively*. Ask students to discuss with an elbow partner and cold call students to share their responses:

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

“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.)

- Remind students that in this lesson, they will participate in a Science Talk and that they started preparing for this talk in the previous lesson.

Meeting Students' Needs

- For students who may need additional support with comprehension: Invite students to draw or sketch definitions, act out, or list synonyms for key terms in learning targets, such as *effectively*, *participate*, *Science Talk*, *clear*, *build*, and *topic*. (MMR)
- For ELLs: Ask:

“What does participate mean?” (Join in on an activity.)

“We often say:

- *participate in (an activity)*
- *actively participate in (an activity)*
- *regularly participate in (an activity)*
- *effectively participate in (an activity)*

There are other common forms of the word:

- *participate (verb/action)*
- *participation (noun/thing)*
- *participant (noun/person)*

What do you participate in after school? How do you effectively participate in a class discussion?”

- For ELLs: Ask about the second learning target:

“What does build my understanding mean? What’s a different way to say that?”

“What are we building our understanding of? Animal food?”

“Have we built our understanding during this module? How?”

“Why do we ask questions?”

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 **Animal Defense Mechanisms: Preparing for a Science Talk note-catcher** in Lesson 11.

Meeting Students’ Needs

- For ELLs and students who may need additional support with information processing: Science Talks help students process their thinking verbally and learn from the thoughts of others. Invite ELLs and students who may need it to verbally discuss their notes from the note-catcher with another student. (MMAE)

Work Time

B. Conducting a Science Talk—Round 1 (15 minutes)

- Gather students on the rug. Invite them to bring their Preparing for a Science Talk note-catcher.
- Display the **Participating in a Science Talk anchor chart**. Briefly review the anchor chart, and answer any clarifying questions.
- Focus students on the **Working to Become Ethical People anchor chart**, specifically respect. Remind students that as they discuss their ideas with one another they may find they have different ideas and will need to be respectful of each other’s thinking.
- Explain that students will talk to each other about what they have been learning. 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.
- Ask:

“Why might this conversation be different?” (more formal with each other and talk to each other like we would talk to an adult)
- Distribute **Science Talk Notes and Goals** sheet.
- Ask students to find the first section of their note-catcher labeled “Ideas and Questions.” Explain that 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 several **sticky notes** to each student in the outside circle to record observations of the norms on the **Discussion Norms anchor chart**. Be explicit with students that they are recording evidence of the norms of the whole group, not individual students, and that these comments should be kind, helpful, and specific so that the group can improve their performance in future class discussions.
- Provide a brief example of what students should write down on their sticky notes by saying something like: “Pay attention to the group you are observing and notice how they use the

norms of a Science Talk. You might write down something on your sticky note like: “Most students used evidence from *Animal Behavior: Animal Defenses* to support their thinking.”

- Direct students to begin the Science Talk Round 1. Use the **Grade 4 Collaborative Discussion checklist** during the discussion 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.

Meeting Students' Needs

- For ELLs: Provide sentence frames for students to use as they participate in the Science Talk: “When I saw/heard ____, I learned ____” and “I wonder ____.”
- For ELLs: Before beginning the Science Talk, quickly demonstrate the student roles: the inside circle language, both circles’ protocols, and how to use the note-catchers and sticky notes so that ELLs have another model.
- For ELLs: If you find it useful, prepare a Science Talk Norms checklist that students can quickly check off instead of writing on sticky notes.
- Some students may find it easier to record their thoughts and questions as sketches rather than words. Encourage them to do so. Consider providing students needing support with note-taking with some visuals to use to help them record ideas and questions. For example, print pictures of different animals that will likely be discussed during the Science Talk. Leave space for students to jot words they hear or questions they have about this animal next to the picture.
- For students who may need additional support with writing or organizing their ideas: Consider framing the “My Science Talk Notes: Ideas and Questions” with more specificity. Offer a copy of the note-catcher as a T-chart with columns such as “Animal Name” and “What I Heard About It” or a 4-square, adding “Something That Was Confusing” or “I Want to Hear More About” sections. (MMAE)

Work Time

C. Conducting a Science Talk—Round 2 (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 collaborative discussion norms and invite students to help you give feedback to the exiting group. Consider using the following prompts:

What are two things this group did really well?

What is 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 each student in the outside circle so they can record observations of collaborative discussion norms.
- As you circulate and note which students are speaking and what ideas are being shared, make sure to record these observations on sticky notes. Refer back to these in future lessons.
- Briefly review the Discussion Norms anchor chart.

- Direct students to begin the Science Talk Round 2. Use the Science Talk Criteria checklist during the discussion to monitor student progression toward the learning targets. Quickly redirect and support students as needed, but avoid leading the conversation. 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. 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 showed respect in this lesson.

Meeting Students' Needs

- For ELLs: As students interact, jot down samples of effective communication and common language errors (pervasive, stigmatizing, critical) from ELLs on the Science Talk Criteria checklist. Share each of these with the class after the Science Talk or during the Closing and Assessment section, allowing students to take pride in the good communication and to correct the errors.

Closing and Assessment

A. Debrief (5 minutes)

- Refocus group. Review each learning target and ask students to refer to the criteria on the Discussion Norms anchor chart to consider two things they did well.
- Invite students to share their successes with the person next to them.
- Focus students on the 'My Goals for the next Science Talk' section of their Science Talk Notes and Goals note-catcher.
- Invite them to review the criteria on the Discussion Norms anchor chart to consider something they would like to do better the next time they do a Science Talk and how they might get better.
- Invite students to share this with the person next to them before recording a goal on the form.
- Explain that you will provide feedback.

Homework

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

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)