

Lesson 1: Speaking and Listening: Working with Fossils



CCS Standards

- **SL.2.1:** Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
- **SL.2.1a:** Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
- **SL.2.1b:** Build on others' talk in conversations by linking their comments to the remarks of others.
- **SL.2.1c:** Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.



Daily Learning Target

- I can use discussion norms to participate in classroom discussions about working with fossils. (SL.2.1, SL.2.1a, SL.2.1b, SL.2.1c)

Ongoing Assessment

- In Work Times B and C, monitor students' use of the discussion norms. Refer students to the Classroom Discussion Norms anchor chart when giving support. (SL.2.1, SL.2.1a, SL.2.1b, SL.2.1c)

Agenda

1. Opening

- A. Engaging the Learner: Mystery Journal Entry #2 (10 minutes)

2. Work Time

- A. Reading Aloud: *Fossils Tell of Long Ago*, Pages 4–32 (15 minutes)
- B. Developing Language: Using Fossil Bones to Build a Skeleton (15 minutes)
- C. Back-to-Back and Face-to-Face: Reflecting on Building a Skeleton (10 minutes)

3. Closing and Assessment

- A. Reflecting on Learning (10 minutes)

Teaching Notes

Purpose of lesson and alignment to standards:

- During the Opening and Work Time A, students are presented with the second of three parts of a mystery journal entry. These entries help introduce ideas to spark curiosity in the unit's area of study. Nurturing an inquiry-rich classroom environment begins with asking questions and cultivating curiosity. This entry also introduces the Unit 2 guiding question: "What can we learn from studying fossils?"

- In Work Time A, a student-friendly text about fossils is read aloud (*Fossils Tell of Long Ago*). Students will use the basics presented in this book as a reference while diving deeper into the content during a close read-aloud in following lessons.
- Work Time B is the first of many hands-on experiences in this unit. Paired with important readings that build content knowledge, these hands-on experiences provide an opportunity to interact with the ideas of this unit and discuss important topic questions with their classmates. In this lesson, students work together in groups to use paper bone cutouts to build a skeleton. This activity should give them insight into how difficult it is to put together bones and how fossils are a bit like puzzles. This activity also acts as a springboard to reinforce the habits of character of collaboration and responsibility, a focus in this unit.
- Students learn a new protocol in Work Time C called Back-to-Back and Face-to-Face. This protocol is another active way to keep students practicing their discussion norms through conversations about a specific topic. In this lesson, students discuss their group work from Work Time B to explicitly name the actions taken when working as a team in preparation for the conversation about habits of character.
- This lesson is the first in a series of three that include built-out instruction for the use of Goal 3 Conversation Cues. Conversation Cues are questions teachers can ask students to promote productive and equitable conversation (adapted from Michaels, Sarah and O'Connor, Cathy. *Talk Science Primer*. Cambridge, MA: TERC, 2012. http://inquiryproject.terc.edu/shared/pd/TalkScience_Primer.pdf. Based on Chapin, S., O'Connor, C., and Anderson, N. [2009]. *Classroom Discussions: Using Math Talk to Help Students Learn, Grades K–6*. Second Edition. Sausalito, CA: Math Solutions Publications). Goal 3 Conversation Cues encourage students to deepen their thinking. Continue drawing on Goal 1 and 2 Conversation Cues, introduced in Module 1, and add Goal 3 Conversation Cues to more strategically promote productive and equitable conversation. In Module 3, Goal 4 Conversation Cues are introduced. Refer to the Module 1 Appendix for additional information on Conversation Cues. Consider providing students with a thinking journal or scrap paper. Examples of the Goal 3 Conversation Cues you will see in the next two units are (with expected responses):

- To encourage students to provide reasoning or evidence:

Teacher: “Why do you think that?”

Student: “Because ____.”

Teacher: “What, in the ____ (sentence/text), makes you think so?”

Student: “If you look at ____, it says ____, which means ____.”

- To challenge students:

Teacher: “What if ____ (that word were removed/the main character had done something different/we didn’t write an introduction)? I’ll give you time to think and discuss with a partner.”

Student: “If we did that, then ____.”

Teacher: “Can you figure out why ____ (the author used this phrase/we used that strategy/there’s an -ly added to that word)? I’ll give you time to think and discuss with a partner.”

Student: “I think it’s because ____.”

- To encourage students to think about their thinking (metacognition):

Teacher: *“What strategies/habits helped you succeed? I’ll give you time to think and discuss with a partner.”*

Student: “_____ helped me a lot.”

Teacher: *“How does our discussion add to your understanding of _____ (previously discussed topic/text/language)? I’ll give you time to think and discuss with a partner.”*

Student: “I used to think that _____, and now I think that _____.”

- The Closing recalls a previously taught habit of character, collaboration, and introduces the new habit of character, responsibility. Students use examples of their work from Work Time B to exemplify the meaning of both words and start to make the connection to how paleontologists use the same habits of character in their work.

How this lesson builds on previous work:

- In Unit 1, students learned about paleontologists and the work they do. In Unit 2, students will use their knowledge of paleontologists to learn about the process of fossilization and the process that paleontologists use to find fossils.
- In Unit 1, students were introduced to the topic through reading narrative nonfiction and learned about literary elements such as character and plot. In Unit 2, students will dive more deeply into reading informational text and analyze text features and sentence structures in these texts to build deeper knowledge about the topic.
- Students revisit and practice the speaking and listening skills built in Module 1.

Areas in which students may need additional support:

- In Work Time B, students work together to create a skeleton. Preview this work with students who may need coaching about solving problems with teammates. Support those students by having them talk through some problems that may arise and asking them for some ways they may try to solve those problems in the moment. Try reminding students of the habits of character they have learned about and how they could apply them in the situation.
- In Work Time C, students learn a new protocol to have discussions with several new partners. For those who may feel uncomfortable talking to a new partner, consider planning their first partnership with someone whom the student feels comfortable with before having them continue conversations with other, less familiar students.

Down the road:

- Students will use the Back-to-Back and Face-to-Face protocol again in this unit to discuss more content about fossils.
- Students will use their basic knowledge from this lesson to help them in the close read-aloud in the upcoming lessons.
- Students will reflect on how they show responsibility at the end of each of the upcoming lessons.
- Students will build content knowledge in this unit in order to write a narrative nonfiction story about finding a fossil in Unit 3. Students will also be asked to share their learning with visitors at the end of the module.

In advance:

- Determine groups of five or six students to work together in Work Time B.

- Make one Bone Envelope per group by copying a set of saber-toothed tiger bones (see supporting materials). Pre-cut the pieces of each set of bones and place them into envelopes. Note: The bones do not make a full skeleton as this activity is designed to show students how paleontologists piece fossils together often missing bones. You can find a full skeleton in the supporting materials to show students during the activity.
- Review the Back-to-Back and Face-to-Face protocol. (Refer to the Classroom Protocols document for the full version of the protocol.) Additionally, watch the “Back-to-Back and Face-to-Face Protocol” video to prepare for when students participate in this protocol in Work Time A (<https://vimeo.com/channels/eleducationk5curriculum>).
- Post: Learning target, photo clue #2, and applicable anchor charts (see materials list).

Technology & Multimedia

Consider using an interactive white board or document camera to display lesson materials.

- Work Time B: Record students as they use classroom discussion norms while building a skeleton to review later to discuss strengths and what they could improve on or to use as models for the group. Most devices (cellphones, tablets, laptop computers) come equipped with free video and audio recording apps or software.
- Work Time C: Create the Back-to-Back and Face-to-Face Protocol anchor chart in an online format—for example, a Google Doc—for display and for families to access at home to reinforce these skills.

Supporting English Language Learners

Supports guided in part by CA ELD Standards 2.I.A.1 and 2.I.B.5

Important points in the lesson itself

- The basic design of this lesson supports ELLs with opportunities to build content knowledge and develop English language skills through multiple modalities, such as listening to a nonfiction text and using oral language in a structured way.
- ELLs may find it challenging to listen to *Fossils Tell of Long Ago* without stopping, especially because it deals with complex scientific concepts processes. Encourage students to use the pictures to help them understand the main idea of the text. Tell them that if they do not understand everything right now, it is okay. Remind students that they will investigate the topic further throughout the unit.

Levels of support

For lighter support:

- During Work Time C, encourage students to use Conversation Cues with other students to extend and deepen conversations, think with others, and enhance language development.

For heavier support:

- During Work Time A, invite students to act out part of the mystery journal entry. Provide visuals for some of the tools mentioned in the mystery journal entry.

Universal Design for Learning

- **Multiple Means of Representation (MMR):** During Work Time B, students work together to use paper fossil bones to build a skeleton. Throughout this group work, students are invited to think about the question: “What can you learn about fossils by trying to arrange them into a skeleton?” Some students may need support in keeping this question in mind as they work hard to arrange a skeleton from the fossil bones. Support this metacognition as students work together by providing a visual reminder of the question. (Example: Display the question on chart paper or sentence strip or offer an index card with the question to individual students.)
- **Multiple Means of Action & Expression (MMAE):** During the read-aloud, some students may benefit from sensory input and opportunities for movement while they are sitting. Provide options for differentiated seating, such as sitting on a gym ball, a move-and-sit cushion, or a chair with a resistive elastic band wrapped around the legs.
- **Multiple Means of Engagement (MME):** During the Closing, students reflect on how they showed responsibility as learners. Optimize relevance and motivation by asking them to reflect on one way they might show or have shown responsibility outside of school.

Vocabulary

Key:

- (L): Lesson-Specific Vocabulary
- (T): Text-Specific Vocabulary
- (W): Vocabulary Used in Writing

New:

- responsibility, ownership (L)

Review:

- collaboration (L)

Materials

- ✓ Mystery journal entry #2 (one to display)
- ✓ Photo clue #2 (one to display)
- ✓ Unit 2 Guiding Questions anchor chart (new; teacher-created; see supporting materials)
- ✓ *Fossils Tell of Long Ago* (one to display; for teacher read-aloud)
- ✓ Classroom Discussion Norms anchor chart (begun in Module 1)
- ✓ Bone Envelopes (one per group)
 - Pre-cut saber-toothed tiger fossil bones (one of each bone)
- ✓ Saber-toothed tiger Fossil Skeleton (for teacher reference)
- ✓ Back-to-Back and Face-to-Face Protocol anchor chart (new; teacher-created; see supporting materials)
- ✓ Working to Become Effective Learners anchor chart (begun in Module 1; added to during the Closing)

Opening

A. Engaging the Learner: Mystery Journal Entry #2 (10 minutes)

- Invite students to the whole group area.
- With excitement, share with students that you have found another journal entry.
- Display **mystery journal entry #2**.
- Remind students that this is a mystery journal entry from someone’s diary, and this entry will give students some clues about what they will be studying.
- Tell students you are going to read the text aloud and as you do, they should consider the following question:
“What is happening in this journal entry?”
- While still displaying the text, read the first paragraph slowly, fluently, with expression, and without interruption.
- Reread the last sentence in the paragraph, emphasizing these words: “I knew that erosion may have brought any bones very close to the surface.”
- Using a total participation technique, invite responses from the group:
“How did the bones come to the surface?” (erosion)
- Share with students that *erosion* sounds like something they will need to learn more about!
- Draw students’ attention back to the text and read the second paragraph fluently, with expression, and without interruption.
- Reread the underlined words in the second paragraph: “it felt like a stone,” “mystery rock.”
- Using a total participation technique, invite responses from the group:
“What words do you think of when you hear stone and rock?” (Responses will vary, but may include references to hardness, shape, or size.)
- Draw students’ attention back to the text and read the third and fourth paragraphs fluently, with expression, and without interruption.
- Reread the last sentence in the paragraph: “I wonder what I can learn by studying this fossil closely?”
- Using a total participation technique, invite responses from the group:
“What do you think the author will learn?” (Responses will vary.)
- Share that you have another clue, something that matches the journal entry.
- Introduce **photo clue #2** and invite students to look closely at it for 30 seconds.
- Using a total participation technique, invite responses from the group:
“What do you notice in this photo clue?” (a man lying down on the ground; a big bone)
- Invite a few students to share their observations but do not confirm their observations.
- Invite students to turn and talk with an elbow partner:
“What was happening in this journal entry?” (digging up a bone; finding a fossil; looking for old things)
- Share with students that they have spent time learning about the people who find fossils, and now it is time to learn more about fossils by trying to answer a specific question.
- Direct students’ attention to the **Unit 2 Guiding Questions anchor chart**. Read the first guiding question aloud:
“What can we learn by studying fossils?”

Meeting Students' Needs

- When using a total participation technique, minimize discomfort, perceived threats, and distractions by alerting individual students that you are going to call on them next. (MME)
- For ELLs: In preparation for the students' work with root words throughout the unit, write and display the words *uncover* and *careful* from Mystery Journal Entry #2. Tell students that another mystery is that there are hidden words inside of these words. Tell students to think about this mystery during class, and that they will "dig them out" later.

Work Time

A. Reading Aloud: *Fossils Tell of Long Ago*, Pages 4–32 (15 minutes)

- Display *Fossils Tell of Long Ago*.
- Share with students that they can learn about fossils from this book and that it will help to get started answering the Unit 2 guiding question: "What can we learn by studying fossils?"
- Tell students that it will also help them start building the learning they will get to share with visitors during their celebration of learning day at the end of the module!
- Draw students' attention to the title of the book and read it aloud.
- While displaying the text, read the text slowly, fluently, with expression, and without interruption.
- Invite students to stand up and turn and talk with an elbow partner:
"What was this book mostly about?" (fossils, how they are made, what they can teach us)
- If productive, use a Goal 3 Conversation Cue to encourage students to provide evidence:
"What, in the _____ (sentence/text), makes you think so?" (Responses will vary.)
- Tell students that they will get a chance to work with paper fossils that may look like the real fossils from the book.

Meeting Students' Needs

- Before the read-aloud, provide white boards and dry erase markers as an option for students to record (drawing or writing) their ideas. This scaffolds active listening and supports students in determining what the book is mostly about. (MMR, MMAE)
- For ELLs: During the read-aloud, display the text on a document camera or an enlarged copy of the text to help direct students to the appropriate sentences on each page.

Work Time

B. Developing Language: Using Fossil Bones to Build a Skeleton (15 minutes)

- Tell students they will now work together, just as real paleontologists do, to put together a skeleton with the fossils they are given. This activity should help them see how hard it might be to figure out how to put fossil bones together.
- Direct students to the posted learning target and read it aloud:

“I can use discussion norms to participate in classroom discussions about working with fossils.”
- Using a total participation technique, invite responses from the group:

“What is a resource in the room that you could use to help you remember the classroom discussion norms?” (Classroom Discussion Norms anchor chart)
- Direct students’ attention to the **Classroom Discussion Norms anchor chart** and select volunteers to read or explain how to use a discussion norm.
- Tell students that while they are in groups, they will be given paper **saber-toothed tiger fossil bones** but will not be told how to put them together. While they are working to put them together, they should think about the question: “What can you learn about fossils by trying to arrange them into a skeleton?”
- Move students into pre-determined groups and distribute a **Bone Envelope** to each group.
- Invite the groups to work together to try to arrange the bones to make a skeleton of a saber-toothed tiger.
- Circulate to support students by reminding them of discussion norms to practice. If students experience trouble with group work, support them by having them talk through the problem with you. Ask for and provide a few solutions the students would like to use to solve the problem. For groups needing help with arranging bones, help them think through other skeletons that they may know and how they are put together.
- When 1 minute remains, invite students to turn and talk in their small group:

What can you learn about fossils by trying to arrange them into a skeleton?” (They are hard to put together; sometimes you don’t know what piece they are; some parts may be missing; you may not know what you are trying to make.)
- Show students the full **Saber-toothed Tiger Fossil Skeleton**.
- If productive, use a Goal 3 Conversation Cue to challenge students:

“Can you figure out why paleontologists might want to put fossils together? I’ll give you time to think and discuss with a partner.” (to see what the whole animal looked like; to make sure they have all the bones)

Meeting Students’ Needs

- For students who may need additional support anticipating or managing frustration: Model what to do if someone in their group suggests placements or places bones in a way that is different from their idea. (Example: “One of my group members may suggest an idea for how to arrange the bones that I don’t agree with. If that happens, I can remember that collaborating means putting everyone’s ideas together, so I can be flexible to help my group collaborate.”) (MME)

- For ELLs: Mini Language Dive. Ask students about the meaning of the chunks from the question: "What can you learn / about fossils / by trying to arrange them / into a skeleton" Write and display student responses next to the chunks. Examples:
"What does this question mean?" Responses will vary.)
- Point to and read aloud the chunk: "What can you learn" and ask:
"What is this question asking about?" (something we can learn)
- Point to and read aloud the chunk: "about fossils" and ask:
"What is the thing we will learn about?" (fossils; the bones and parts of animals long ago)
- Point to and read aloud the chunk: "by trying to arrange them" and ask:
"How will we learn about these fossils?" (by trying to move them around; put them together)
- Point to and read aloud the chunk: "into a skeleton" and ask:
"What will we try to make when we put them together?" (a skeleton; the bones of a whole animal)
"Now can you ask the question in your own words?" (What can we learn about fossils when we try to put them together to make a skeleton?)

Work Time

C. Back-to-Back and Face-to-Face: Reflecting on Building a Skeleton (10 minutes)

- Give students specific, positive feedback about their use of the discussion norms while talking with their group. (Example: "I noticed Penelope responded to her teammate's ideas by adding on.")
- Tell students that they did a lot of hard work together, and now they will get a chance to talk about how they worked in their groups using a new protocol.
- Direct students' attention to the posted **Back-to-Back and Face-to-Face Protocol anchor chart**.
- Have students find a partner and stand back-to-back with each other, being respectful of space.
- Remind students to use the classroom discussion norms as they talk with their partner.
- Ask students the following question and give them 30 seconds to consider how they will respond:
"How did your team decide to start building the skeleton?" (Responses will vary.)
- Invite students to turn face-to-face to share their responses.
- Circulate to listen as students share with each other.
- Have students repeat this process with a new partner for the following questions:
"What was difficult about this group work?" (Responses will vary.)
"What did you do to help your team get the work done?" (Responses will vary.)
- Ask students to return to the whole group area.

Meeting Students' Needs

- For students who may need additional support with oral language or processing: Provide sentence frames during the Back-to-Back and Face-to-Face protocol. Examples:
 - “We started building the skeleton by ____.”
 - “One thing that was difficult was when ____.” (MMAE)
- For ELLs: For each question, model how it might be answered before students consider their own responses. Provide sentence frames as needed. (Example: “Rosie’s team started with the head. So Rosie could say, ‘First, we started with the head. Then ...’ How did your team start building? You can use the frame: First, we _____. Then we ...”)

Closing and Assessment

Reflecting on Learning (10 minutes)

- Direct students’ attention to the **Working to Become Effective Learners anchor chart**.
- Invite students to join you in reading aloud the definition of collaboration:

“This means I can work well with others to get something done.”
- Invite students to turn and talk to an elbow partner:

“What does it look like or sound like to work well with others?” (taking turns, using kind words)

“How did someone in your group collaborate well when you were building the skeleton?” (Responses will vary.)
- Cold call a couple of students to share out.
- Tell students there is another habit of character to add to the chart: *responsibility*.
- Define responsibility (to take ownership of your work, your actions, and your space) and ownership (you say that it is your own, and you treat it in certain ways because it is personal and important to you).
- Write *responsibility* and its definition on the anchor chart.
- Give two or three examples of students using responsibility in their group work. (Examples: “I noticed Jacob showing responsibility for his actions when he apologized for not waiting his turn.” “I noticed Keshawn showing responsibility for his space when he tucked in the chairs that were pushed out.”)
- Invite a couple of students to share out a few more examples of responsibility from their group work.
- Tell students that, just like their work today in groups, paleontologists need to show habits of character all of the time when they are working with fossils, especially by showing collaboration and responsibility.
- Invite students to Think-Pair-Share with an elbow partner:

“How do paleontologists show collaboration and responsibility?” (They work together to dig out fossils. They take care of the fossils they find.)
- Share with students that as they learn more about fossils, they will be able to see more ways paleontologists use habits of character in their work every day!

Meeting Students' Needs

- To activate background knowledge, invite students to recall their learning from the previous unit in which they studied paleontologists. Ask:

“What did we learn that paleontologists like Mary Anning do?” (MMR)

- For ELLs: On the Working to Become Effective Learners anchor chart, add dialogue that students can use to show responsibility. Briefly practice using some of the dialogue. (Examples: “Oops, that was my fault. I apologize.” “This is my work, so I am going to do my best.”)
- For ELLs: Return to the mystery words *uncover* and *careful* from Opening A. Invite students to share any words that they found within *uncover* and *careful*. Reveal the words *cover* and *care* to students if necessary. Tell students these are called *root words* and that they will continue to “dig up” new root words throughout the unit.