



# DISCIPLINARY DISCUSSIONS

## Module Two Manual

# Table of Contents

## SECTION

## PAGE

1

Handouts that Accompany Slides.....1

2

Classroom Vignettes.....15

3

Metacognition in Disciplinary Discussions.....32

## Primary Grade Example Lesson: Provide Extended and Supported Opportunities for Students to Engage in Disciplinary Discussions

1. In this example, the teacher layers texts within a set that includes a poem, an informational text, and a song (audio and visual text) to support student discussions about amphibians. Students can use their individual Conversation Skills posters to support them in their disciplinary discussion. The emphasis is on giving students the opportunity to use the Conversation Skill.

Make sure the graphic organizer on page 61 is in each student packet. Depending on the ability of the students, the graphic organizer can be a projected or a shared online document so it can be used as a classroom chart that is filled in by the teacher with student input or by students as an interactive writing piece.

2. Reproduce the poem “I Am an Amphibian” (see below) and put it in student packets. Project the poem so all students can see it. Read the poem once. Ask students to listen to it again and think about what amphibian facts are in this poem. You can model this as a think aloud with the first four lines.

### **I Am an Amphibian**

I am an Amphibian,  
that is me.  
I live in the water  
and on land you see.  
We are salamanders,  
frogs or toads.  
You won't catch us  
walking down the road.  
We start off as eggs  
laid in a pond  
And develop gills and tails  
after we spawn.  
Lungs and legs are next you see  
that help us climb a tree.  
I am cold blooded,  
That is astounding?  
I am the same temperature  
as my surrounding.  
Amphibian!

3. Place students into breakout rooms in Zoom or Google Meet and ask them to discuss with their partner the facts about amphibians in the poem. Have students underline the facts in their own copies as they discuss them. The number of sentence prompts and responses you use depends on your students. You can differentiate this by providing beginning students two or four prompts and responses while more capable students can use all of them. Again, make sure students have copies in their packets.  
with their partner the facts about amphibians in the poem. Have students underline the facts in their own copies as they discuss them. The number of sentence prompts and responses you use depends on your students. You can differentiate this by providing beginning students two or four prompts and responses while more capable students can use all of them. Again, make sure students have copies in their packets.

Prompts

One fact is...  
What other fact is there?  
What does that mean?  
Where does it say that?  
Do you agree?

Responses

What do you think?  
Another fact is...  
I think it means...  
It says it right here.  
I agree because...

4. After students have discussed the facts in pairs, ask them to share out their facts to the whole class and you can record them on the projected graphic organizer in the column under "Poem." You can also project visual representations of the facts to help students remember the words.
5. On the next day, have students meet with new partners in Zoom breakout rooms. Ask them to share one thing they learned about amphibians and why it is interesting. Explain they are going to be learning more facts about amphibians from a video. Show students the audio/visual text on amphibians on YouTube: <https://www.youtube.com/watch?v=ti0HDtRY8u4>. Watch it again and ask students to think about the facts they hear in the song. Have the lyrics written out on a handout in their packets and on the wall as a chart. Sing the song again as you point to the words (and sing the song throughout the week). Have students discuss the facts they heard in the song. Use the same sentence prompts and responses from yesterday.

Prompts

One fact is...  
What other fact is there?  
What does that mean?  
Where does it say that?  
Do you agree?

Responses

What do you think?  
Another fact is...  
I think it means...  
It says it right here...  
I agree because...

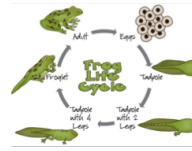
6. After students have discussed the facts in pairs on Zoom, ask students to share out their facts, and record them on the class graphic organizer in the column under "Video." You can post visual representations to the chart to help students. Compare the two columns: What is the same, and what is new information? Cross off anything in column 2 that is the same as column 1 so there isn't any duplicate information.
7. On the following day, have students meet with new partners in Zoom. Ask them to share one new thing they learned about amphibians and why it is interesting. Explain that today they are going to be reading a nonfiction article about amphibians (see below). They are going to be 'text detectives' and look for new facts about amphibians with their partners. If students are unable to read the text, you can project it and read it to them before they go into breakout rooms.



## Amphibians

Amphibians are very unusual animals. The word amphibian means two lives. They live both in water and on land. They begin as eggs and then grow gills and tails. As they get older, they get lungs and legs. This is called metamorphosis.

Amphibians also have other interesting characteristics. First, they are cold-blooded animals. This means their bodies are the same temperature as the water or the air around them. Second, an amphibian's skin absorbs air and water. That makes it is very sensitive to pollution. Next, amphibians are vertebrates because they have a backbone. However, unlike many vertebrates, they don't have any hair or fur. Finally, adult amphibians have an interesting diet! They like to eat spiders, beetles, and worms.



There are over 4,000 types of amphibians. The most common are frogs, toads, newts and salamanders. They are found on every continent except Antarctica.



Salamander



Newt



Frog



Toad

8. Direct them to talk to their partner and discuss any new facts about amphibians in the article. Have them underline the facts on their own copies as they discuss them. Use sentence prompts and responses.

### Prompts

One new fact is...  
 What other new fact is there?  
 What does that mean?  
 Where does it say that?  
 Do you agree?

### Responses

What do you think?  
 Another new fact is...  
 I think it means...  
 It says it right here...  
 I agree because...

9. After students have discussed the facts in pairs, ask students to share out their facts and highlight them on the chart paper. Then record them on the class graphic organizer in the column under "Text."
10. Explain to students that, after they review all the facts about amphibians from the graphic organizer, they are going to meet in a group of four, two classroom students and two Zoom students. They will discuss which facts about amphibians they find most interesting and why. Then they will try to come to an agreement about which fact is most interesting. Choose a student on Zoom and model this process as a think aloud using sentence stems and the graphic organizer.
11. Process the use of discussion skills with your students by citing different students' use of the skills that you witnessed as you monitored their discussions. You can monitor the discussions by walking around the classroom and listening in or by joining the different Zoom breakout rooms. Using the poll function in Zoom ask students to rate their use of each of the discussion skills and set goals for the next opportunity.

## Strategy for Element 2: What Makes You Say That?

---

- ✧ Choose a visual text to use for this activity.
- ✧ Distribute the graphic organizer on page 4 and review the questions with students.
- ✧ Explain that students will have a discussion with a partner in which they ask and respond to these questions using the prompts below.
- ✧ Students then document their responses on the graphic organizer.

### Prompt Starters

I think this is taking place...

What can you say about the people?

What else do you notice?

### Prompt Responses

I say so because....

I can say....

I notice that....

## What Makes You Say That?

|                                       |                          |
|---------------------------------------|--------------------------|
| When do you think it is taking place? | What makes you say that? |
|                                       |                          |
| What can you say about the people?    | What makes you say that? |
|                                       |                          |
| What else do you notice?              | What makes you say that? |
|                                       |                          |

## The Problem We All Live With



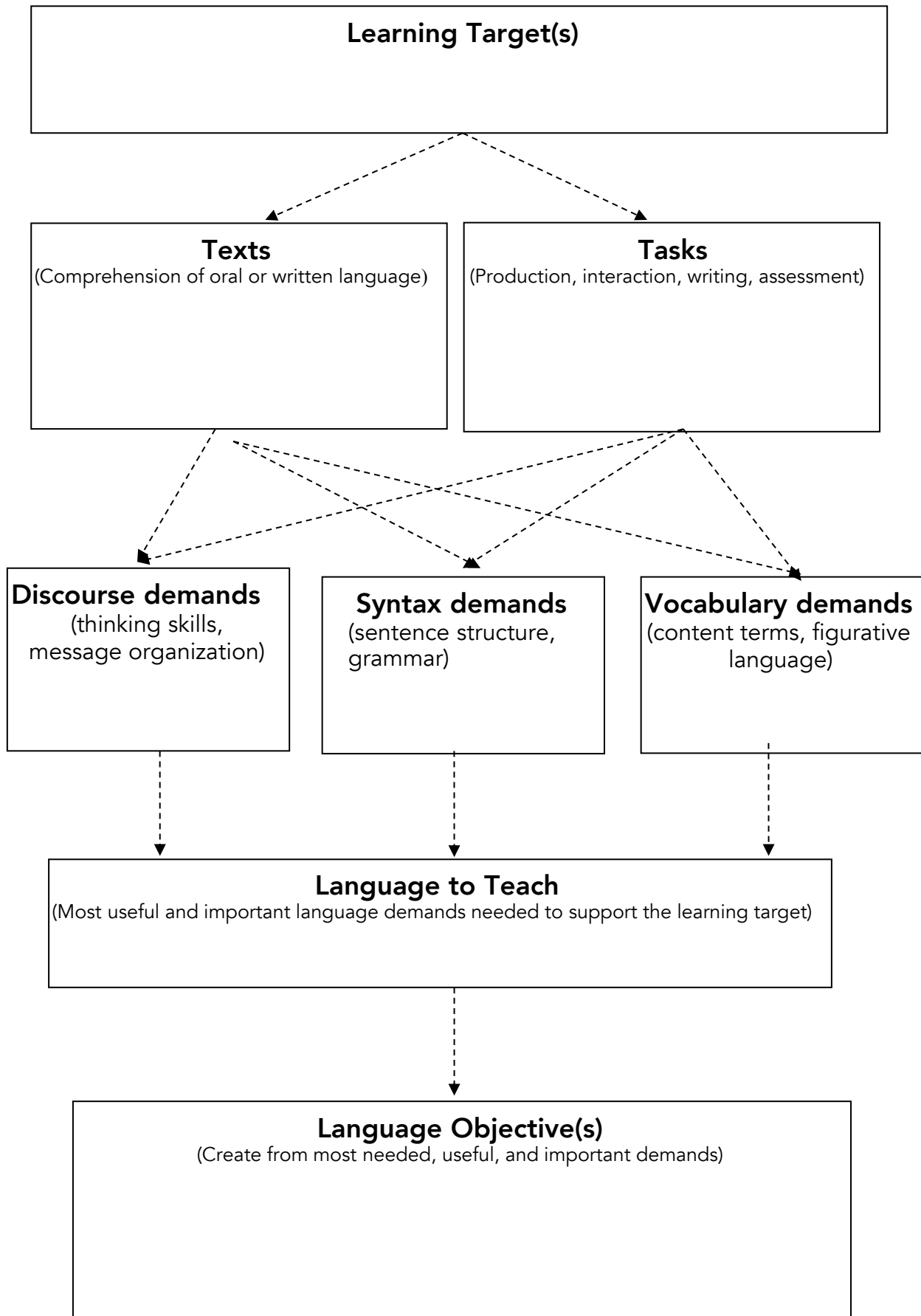
Table 2.1

Disciplinary Discussions Teaching Frame

|                         |  |  |   |
|-------------------------|--|--|---|
| HIGH-IMPACT PRACTICE    | Disciplinary Discussions (DD)<br>Element 1: Build conversation skills (Create, Clarify, Fortify, Negotiate)<br>Element 2: Provide extended and supported opportunities for students to engage in disciplinary discussions  |  |   |
| CROSS-CUTTING PRACTICES | Facilitating Acquisition of Academic Language (FAAL)<br><br>Element 1: Introduce and/or refer to the academic language demands of texts and tasks<br>Element 2: Provide extended and supported opportunities for students to acquire and use the features of academic language   | Fostering Metacognition for Disciplinary Learning (FM)<br><br>Element 1: Visibly enact metacognitive processes and/or strategies students are expected to use in support of disciplinary learning<br>Element 2: Deconstruct metacognitive processes and/or strategies that support disciplinary learning | Monitoring and Guiding Disciplinary Learning (MG)<br><br>Element 1: Monitor learning and adjust instruction, supports, and/or disciplinary tasks to meet student needs<br>Element 2: Provide written and/or oral feedback during lessons to promote disciplinary learning |
| FOUNDATIONAL PRACTICE   | Designing Instruction for Disciplinary Thinking and Understanding (DI)<br>Element 1: Set disciplinary learning targets that are aligned with ELA/Literacy CCSS and the target high-impact practice<br>Element 2: Structure and connect tasks that support the learning targets<br>Element 3: Establish high expectations that support the learning targets and maintain the intellectual rigor of classroom activities and tasks |  |   |



## Identifying Language Demands



## The Magnificent Ant

Ants are everywhere! Chances are if you see one zipping across your floor, there are thousands of others somewhere nearby. That is because ants are considered sociable insects. They live in colonies, also known as a super-organisms, which can literally contain millions of ants. They are considered super-organisms because they are so united toward the common purposes of survival, growth, and reproduction that they behave like a single organism. Ant superorganisms can solve difficult problems by processing information as a group. For example, a colony can compare potential nest sites before collectively choosing the best one.



Do you wonder how ant colonies gets created? Early in their lives, the queen ant is programmed to create a new colony by flying off with male ants to mate. Once the larvae mature and can take care of the queen, her role shifts to being an egg-laying machine. In fact, some queens can produce millions of eggs in a lifetime. The female workers tend to the queen's needs, build and maintain the nest, and forage for food. Some ants' sole job is to remove eggs as the queen lays them and bring them to a room in the nest called the nursery. The ant attendants do nothing else in their entire lives except take care of the colony's larvae. It is interesting that the queen is not the leader; in fact, there is no leader.

Ants communicate mainly through chemicals which they smell with their antennae. Workers release pheromones with specific messages that other ants can follow, such as "Follow me to food!" or "Attack the intruder!". Ant's antennae may have as many as thirteen joints. They spend a lot of time cleaning their antennae which indicates how important they are. They also "listen" by feeling vibrations from the ground through their feet.

“What's the Gist?” Table

Ten Words

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |

Five words

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|--|--|--|--|--|

Three words

|  |  |  |
|--|--|--|
|  |  |  |
|--|--|--|

Sentence:

## Video Evidence

Watch the video.

- Note any evidence of the elements of the Cross-Cutting practice, Facilitating Acquisition of Academic Language.
- When the video ends take a few minutes to organize your thoughts.
- You will be placed into a breakout room with other participants to discuss and compare your evidence.
  - Element 1: Introduce and/or refer to the academic language demands of texts and tasks
  - Element 2: Provide extended and supported opportunities for students to acquire and use the features of academic language

What would this look like in a hybrid classroom?

The video showcased the practice in a traditional classroom.

- Take a few minutes to write down some thoughts on how you could facilitate acquisition of academic language in a hybrid classroom.
- You will be placed in a breakout room to share your ideas. Pay particular attention to the routines the teacher uses and discuss what routines could be used when some of your students are in the classroom and some are online.
- Choose one person to write down the ideas and when you return to the whole group, please have that person place one or two ideas in the chat.



## Video Evidence

Watch the video.

- Take notes on any evidence of the elements of the Cross- Cutting Practice, Monitoring and Guiding Disciplinary Learning.
- When the video ends take a few minutes to organize your thoughts.
- You will be placed into a breakout room with other participants to discuss and compare your evidence.
  - Element 1: Monitor learning and adjust instruction, supports, and/or disciplinary tasks to meet student needs
  - Element 2: Provide written and/or oral feedback during lessons to promote disciplinary learning

## What would this look like in a hybrid or online classroom?

The video showcased the practice in a traditional classroom.

- Take a few minutes to write down some thoughts on how you could monitor and guide disciplinary learning in a hybrid classroom.
- You will be placed in a breakout room to share your ideas. Pay particular attention to the routines the teacher uses and discuss what routines could be used when some of your students are in the classroom and some are online.
- Type your ideas using the chat.

## Post Module Activity

### Identifying Evidence in Vignettes

Module

2

#### ► Activity to complete between Module 2 and Module 3

##### Step into the Classroom

Read **either** the kindergarten or fourth grade vignette that follows. Using the language of the practices and their elements as a guide, **underline** any evidence that indicates how the teacher addresses the cross cutting practices *Facilitating Acquisition of Disciplinary Learning and Monitoring and Guiding Disciplinary Learning*. When you have finished, compare what you have underlined to the highlighted evidence you see on page 19 or page 23.

##### Kindergarten Vignette

Mr. Mateo's Kindergarten grade class is a hybrid class. Group A students are in the classroom on Mondays and Tuesdays and use Zoom to connect to the classroom on Thursdays and Fridays. Group B students use Zoom to connect to the class on Mondays and Tuesdays and are in the classroom on Thursdays and Fridays. On Wednesdays Mr. Mateo uses the time to meet online in small groups with students who need extra support while her other students are working online independently.

Mr. Mateo's kindergarten class is beginning their two-week inquiry unit on weather. His class has been working on having conversations with a partner for the past few months using the Conversation Skills poster. The standards he is addressing for this unit are as follows:

- K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time.
- K.SL.1: Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
- K.SL.3: Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
- K.SL.6: Speak audibly and express thoughts, feelings, and ideas clearly.

Mr. Mateo begins the weather unit on Monday and he has logged into Zoom on his classroom desktop and is ready to share and project his screen as needed. He has also logged into zoom on his iPad which is on a table top tripod and connected to his TV monitor on a cart. He has a grid of the online students showing and the iPad camera facing him.

He starts by explaining the seasons—winter, spring, summer, and fall—to his class. To build conceptual knowledge, he and his students have read books, looked at visual texts, and explored the seasons on the Internet.

He brings the classroom students to the carpet and the iPad Tripod and TV Cart is placed close to the student circle. He explains to them that when they are learning something new, it is important to stop and think about what they have learned. It helps the brain remember. He asks them to take a moment and think about what they have learned about that particular season. He tells them he will ask them to share out. He then models how he wants the students to share by pointing to the sentence frames he has in the pocket chart and saying, “I learned that winter is... What else did you learn? I also learned that...” He chooses a few classroom students and a few Zoom students to share out. Next he lists the different facts on the whiteboard. Mr. Mateo then asks his students how those facts might be grouped together. The students come up with the labels “Weather,” “What You Wear,” and “What You Can Do.” After grouping the facts, Mr. Mateo creates charts that visually represent the class’s findings. He also adds the months for each season.



After creating a chart for each season, Mr. Mateo poses a question to his class: “Imagine you were a weather forecaster. What kind of weather would you forecast for April?” He asks his class, “How should we go about discussing this?”

Juan raises his hand and says, “We all have our own ideas, and we all want to talk. How about if we talk in partners?”

“Wow, what a great idea, Juan! But once we get into partners, how do we know who is going to talk first?”

Alice calls out, “We can rock, paper, scissors and use the conversation strips from the Conversation Skills chart.”

“Good thinking. Let’s use our prompts and responses. It’s been a couple of days since we’ve used them, so let’s review. The green line is the...”

“First person,” the class responds, “because green is the beginning, like in our writing caterpillar, and the first thing on a stoplight.”

“Great job! And the...” prompts Mr. Mateo.

“Second person is written in red,” responds Jose.

Mr. Mateo now tells the in class students to go to their desks where their iPads are logged into the Zoom session. He reminds them to have their headphones ready to use and tells them that soon he will be sending them to their zoom partner rooms. Once the students have moved to their desks Mr. Mateo reviews the question: “Imagine you were a weather forecaster. What kind of weather would you forecast for April?” He has students complete a Zoom poll and choose “sunny,” “windy,” “rainy,” and “cloudy”. Each word in the poll has a picture next to it to help the students. Each student completes the poll. Mr. Mateo then shows the poll results on the Zoom screen so students see how many choose each answer.

Mr. Mateo tells students that he will be placing them in their zoom partner room. He chooses a Zoom student to model how they should begin and remind them of the norms for their discussions. “Miguel are you ready for our conversation?” “Yes, I’ll be your partner.” Mr. Mateo motions toward the Partner anchor chart, which shows two students sitting eye-to-eye, hand-to-hand, and knee-to-knee. He says, “Look at how I am looking into the camera directly so I can make eye contact with Miguel and Miguel is making eye contact with me. I am sitting up straight and speaking clearly and I am allowing Miguel to finish his thoughts before I start speaking.

Mr. Mateo asks the students to turn to the Conversation Skills chart in their Science folders. Then he directs the partners to follow along on their charts as he points to the Create prompts and responses on the classroom chart. “Remember when we used the Create and Clarify prompts to help us discuss what we knew about bears? Today we are going to use the same prompts when we discuss the types of weather we forecast for April. Partner 1, please use one of the prompts, written in green, to ask your partner about his or her weather hypothesis for April. Partner 2, respond using the response written in red. Now we are ready to begin so please put on your headphones.” Mr. Mateo then places students into their breakout rooms.

Mr. Mateo circulates around the room and when he wants to listen to a discussion he taps a student on the shoulder and asks them to unplug their headphones. He listens to conversations, redirecting when needed. “Jill, you asked Karem, ‘What do you think the weather will be in



April?' Karem, you said, 'Cloudy.' Let's look at our responses. How should you begin your response? Look at your chart. Point to April's question. Now look at the response. What should you say?"

Karem responds, "I think it will be cloudy."

"Yes, exactly. You need to respond in a complete sentence, and your Conversation Skills chart can help you."

Mr. Mateo gets the students' attention by stopping the breakout room and bringing the students back to the main Zoom room. He then reminds the classroom students to take off their headphones and look up from their iPads. He has them look at the Conversation Skills charts on his shared screen and in their hands and chorally repeat the Clarify prompts along with the responses as he models them. He tells the students to put back on their headphones and return to Zoom breakout rooms and clarify their weather decisions with their partners. He continues to walk around the room and monitor the discussions. Based on what he hears, he decides that the students are ready to explore the Fortify portion of the Conversation Skills chart.

"Excellent," Mr. Mateo states after he closes the breakout rooms and claps for silence. "Wow! You all were using the Create and Clarify portions of the Conversation Skills amazingly. You really explained your thinking to one another by clarifying your hypotheses. Are you ready for a challenge? Something that only second graders do?"

The students' overwhelming answer is yes, yes!

"OK, let's look at the next section of your chart, which is Fortify. Show me your muscles by putting both hands up with your arms bent and say, 'Fortify!' He checks that students in the classroom and on the Zoom grid are all participating. 'Fortify' means to say what you think and support it with evidence from the text. By fortifying, you are giving your ideas strength. You get to be 'text detectives' and use your charts to fortify your ideas. Being a text detective means connecting your prior knowledge to new knowledge. Considering what you already know about a topic helps you remember the new knowledge. Now let's look at the prompts and responses and try them out." Together the class and Mr. Mateo read the Fortify prompts and responses; Mr. Mateo points to each one on the projected poster as the students read them with him.

"Now we are going to put the three skills together. Let's see what this looks like." Mr. Mateo asks Julia to come up and help him model the discussion. He explains that Julia will have her Conversation Skills chart in front of her, and he will use the poster so that everyone can see what he is doing.

Julia says, "What do you think the weather will be in April?"

Mr. Mateo points to Create on the conversation chart, modeling how to find the response in the Create section. “I think it will be mostly rainy in April.”

Julia says, “Why do you think that?”

Mr. Mateo again models how to find the response in the Clarify section. “I think that because April is in the middle of spring so it’s not yet sunny.”

Julia says, “How do you know that?”

Mr. Mateo continues to model how to find the response in the Fortify section. “In the text that we read, it said that the rain makes the new flowers grow, and we found out that spring is when all the new flowers come up.”

Mr. Mateo again tells students that they will be placed into breakout Zoom rooms with new partners. Once all students are seated, Mr. Mateo asks the class to discuss their forecasts using the Conversation Skills graphic organizer, Create, Clarify, and Fortify. He then launches the breakout rooms. He circulates around the room, stopping at each pair, listening, prompting where needed, giving a thumbs-up, and questioning for clarification or fortification.

After highlighting evidence you see of FAAL and MGD L compare to the highlighted vignette - page 19

### **Fourth Grade Vignette**

Ms. Costello’s fourth grade class is a hybrid class. Group A is in the classroom on Mondays and Tuesdays and uses zoom to connect to the classroom on Thursdays and Fridays. Group B uses Zoom to connect to the classroom on Mondays and Tuesdays and is in the classroom on Thursdays and Fridays. On Wednesdays Ms. Costello uses the time to meet online in small groups with students who need extra support while her other students are working online independently.

The class is starting a life science unit, which will address the Next Generation Science Standards and CCSS Literacy Standards listed below:

LS1.A Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.

LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

CCSS.ELA-LITERACY.RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.

CCSS.ELA-LITERACY.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.

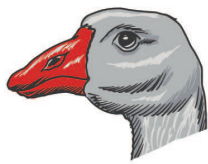
For this unit, Ms. Costello has assigned students four different learning partners: insect, bird, cactus, and tree. For today's activity, one student from Group A and one from Group B will be paired. An anchor poster of conversation skills is posted on the wall as well as sentence prompts and responses. Each student has their own mini laminated poster set included in their unit packet. She also has an anchor chart on the wall listing norms of interaction (e.g., leaning in, making eye contact, facing the computer screen directly) that she references throughout the unit.

Ms. Costello launches her lesson on a Monday with group A in her classroom and group B zooming in from home, greeting each student as they enter the room or log into zoom. To start the lesson, she asks students to think about the conversation skills and norms of interaction and how well they have been implementing them. She holds up the mini posters and tells students to have theirs beside them so they can reference them during the lesson. She reminds students about the strategies they can use when the conversation stalls and she points to the poster on the wall. She asks a few students to read the poster. She selects volunteers who are in the classroom as well as those participating via zoom. She then has all students complete a Do Now, highlighting areas where they can improve their participation in today's discussion. She calls on a few students to share their Do Now.

She begins today's lesson by projecting a variety of bird beaks on the screen as a way to engage all students in a disciplinary discussion. She asks the students to take a moment and examine the bird beaks. She asks the question, "What do you notice about these bird beaks?" She has students share out some of the things they notice. Now I want you to make a prediction of what the bird eats based upon the size and shape of their beak. Can someone read our definition of prediction that is on our anchor chart? Yes, a guess based upon an observation of patterns. Making predictions is an important skill scientists use every day to guide their research. Prediction is one of six basic processing skills in science. I'm asking you to predict because I want you to use your observations of the pictures of the beaks and your prior knowledge to think about the function of the beaks as we begin this unit."

"You would support your prediction by thinking about the size and shape of the beak. I have a sentence frame on the board and in your packet. 'I think the \_\_\_\_ eats \_\_\_\_ because the shape of the beak is \_\_\_\_\_. So an example of what you can say is, 'I think the duck eats small fish and small seeds from the water because the shape of the beak is flat and round.'

She points to the Conversation Skills poster and, using the sentence stems she has provided, models the conversation skills the partners will use. "I notice that the duck's bill is rather flat. What do you notice? I agree it is flat and kind of long. What else do you notice? I notice that the spoonbill and kiwi have really long beaks but are different shapes. Yes, I agree, and I also think... What kind of food do you think the duck eats based upon the shape and size of its beak? Because the beak is flat and rather large, I think it takes in water and small fish. What do you think?"



duck



pelican



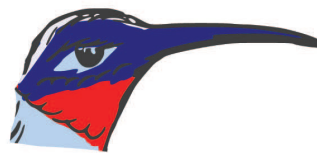
woodpecker



heron



eagle

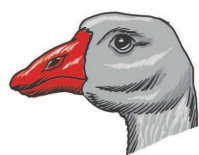


hummingbird

Ms. Costello has classroom students open up their Chrome books and get ready to meet with their cactus learning partners via zoom - with one partner in the classroom and one partner online. She reminds them of their discussion skills by pointing to the poster and the sentence frames. As students are discussing the prompt, she walks around the room listening to discussions the classroom students are having with their zoom partner. She prompts students when necessary regarding their use of the conversation skills and use of the sentence frames. When students have completed the task, she projects a second picture of a bird beak, but this one shows the function of the beaks. She holds up everyday objects as examples of each beak (e.g., a kitchen strainer as an example of a strainer, an ice cream scoop for a scooper, an ice pick for a spear) so students can visualize how each beak functions.

She again asks students to work with their learning partners (1) to discuss how this information adds to or changes their prediction and (2) to restate their prediction based upon the new information. Again, Ms. Costello walks around the room to monitor students' responses. She is listening to see what adjustments she needs to make to the rest of the lesson to respond to any misconceptions.

Julie is in the classroom and is working with Ramon via Zoom. They are having difficulty restating their prediction based upon the new information. Ms. Costello prompts them by directing them to the sentence frames in their packets, "My prediction about the \_\_\_\_ has changed because \_\_\_\_\_. I now know that the \_\_\_\_ beak's function is to \_\_\_\_\_ and the shape of it allows it to function that way."



strainer



scooper



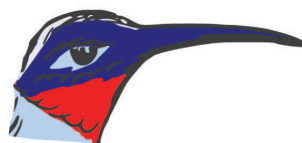
chiseler



spearer



shredder



nectar feeder

After some students share their predictions with the class, Ms. Costello asks, “If I were a pelican and I had a chisel beak, how would that affect what I ate and where I ate?” Through her questioning, she guides both A and B students to help them understand that there is a connection between the two. She moves to the day’s learning target: students will be able to explain the external structure and function of plants and animals and how they support survival, growth, behavior, and reproduction. She then deconstructs the learning target and defines the vocabulary words: function (what it does), structure (physical appearance), and external (outside). She connects the bird beaks exercise to external structure and function of an animal and to what many students said regarding survival and growth.

She then displays pictures of plants and animals (giraffe, rose thorns, polar bears, spider web, vines, water lily) and has students discuss with their learning partners what they notice about their structure. Then she has them think about and discuss the function and how it supports survival, growth, behavior, and reproduction. She has provided them with sentence stems in their packet and asks them to take them out and use them: The \_\_\_\_ has \_\_\_\_\_ to help them \_\_\_\_\_. This structure supports their \_\_\_\_\_. She asks the student partners to have one of them be a recorder in order to capture their thinking.

When students finish, she asks two students to come to the front of the class and be in a fishbowl. She projects a new picture and asks them to discuss it as they did before. She asks the rest of the class to listen for clarifying and fortifying moves the students make. Once they finish, she asks the pair of students what they thought they had done well regarding their conversation skills and what they thought they could improve on. She then gives the rest of the class the opportunity to provide additional feedback.

She concludes the lesson by explaining that in this unit they will also be looking at internal structures and functions of the plants and animals and how they support survival, growth, behavior, and reproduction. The unit will conclude with them selecting one external and one internal structure of an animal and constructing an argument regarding how these structures



help the animal grow, survive, behave, or reproduce. She asks students, “What stuck with you today?” and has them answer the question on their white boards. She has both groups of students hold up their white boards so she can check for understanding.

After highlighting evidence you see of FAAL and MGDL compare to the highlighted vignette on pages 23.

## Kindergarten Vignette

Ms. Mateo's Kindergarten grade class is a hybrid class. Group A students are in the classroom on Mondays and Tuesdays and use Zoom to connect to the classroom on Thursdays and Fridays. Group B students use Zoom to connect to the class on Mondays and Tuesdays and are in the classroom on Thursdays and Fridays. On Wednesdays Ms. Costello uses the time to meet online in small groups with students who need extra support while her other students are working online independently.

Mr. Mateo's kindergarten class is beginning their two-week inquiry unit on weather. His class has been working on having conversations with a partner for the past few months using the Conversation Skills poster. The standards he is addressing for this unit are as follows:

K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time.

K.SL.1: Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.

K.SL.3: Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

K.SL.6: Speak audibly and express thoughts, feelings, and ideas clearly.

Mr. Mateo begins the weather unit on Monday and he has logged into Zoom on his classroom desktop and is ready to share and project his screen as needed. He has also logged into zoom on his iPad which is on a table top tripod and connected to his TV monitor on a cart. He has a grid of the online students showing and the iPad camera facing him. He starts by explaining the seasons—winter, spring, summer, and fall—to his class. To build conceptual knowledge, he and his students have read books, looked at visual texts, and explored the seasons on the Internet.

He brings the classroom students the carpet and the iPad Tripod and TV Cart is placed close to the student circle. He explains to them that when they are learning something new, it is important to stop and think about what they have learned. It helps the brain remember. He asks them to take a moment and think about what they have learned about that particular season he tells them he will ask them to share out. He then models how he wants the students to share by pointing to the sentence frames he has in the pocket chart and saying, "I learned that winter is... What else did you learn? I also learned that..." He chooses a few classroom students and a few Zoom students to share out. Next he lists the different facts on the whiteboard. Mr. Mateo then asks his students how those facts might be grouped together. The students come up with the labels "Weather," "What You Wear," and "What You Can Do." FAAL After grouping the facts, Mr. Mateo creates charts that visually represent the class's findings. He also adds the months for each season.



After creating a chart for each season, Mr. Mateo poses a question to his class: “Imagine you were a weather forecaster. What kind of weather would you forecast for April?” He asks his class, “How should we go about discussing this?”

Juan raises his hand and says, “We all have our own ideas, and we all want to talk. How about if we talk in partners?”

“Wow, what a great idea, Juan!”<sup>MGDL</sup> But once we get into partners, how do we know who is going to talk first?”

Alice calls out, “We can rock, paper, scissors and use the conversation strips from the Conversation Skills chart.”

“Good thinking.”<sup>MGDL</sup> Let’s use our prompts and responses. It’s been a couple of days since we’ve used them, so let’s review. The green line is the...”

“First person,” the class responds, “because green is the beginning, like in our writing caterpillar, and the first thing on a stoplight.”

“Great job!”<sup>MGDL</sup> And the...” prompts Mr. Mateo.

“Second person is written in red,” responds Jose.

Mr. Mateo now tells the in class students to go to their desks and to where their iPads are logged into the Zoom session. He reminds them have their headphones ready to use and tells

them that soon he will be sending them to their zoom partner rooms. Once the students have moved to their desks Mr. Mateo reviews the question: "Imagine you were a weather forecaster. What kind of weather would you forecast for April?" He has students complete a Zoom poll and choose "sunny," "windy," "rainy," and "cloudy". Each word in the poll has a picture next to it. Each student completes the poll with his or her answer. Mr. Mateo then shows the poll results on the Zoom screen so students see how many choose each answer.

Mr. Mateo tells students that he will be placing them in their zoom partner room. He chooses a Zoom student to model how they should begin and remind them of the norms for their discussions. "Miguel are you ready for our conversation?" "Yes, I'll be your partner." Mr. Mateo motions toward the Partner anchor chart, which shows two students sitting eye-to-eye, hand-to-hand, and knee-to-knee. He says "look at how I am looking into the camera directly so I can make eye contact with Miguel and Miguel is making eye contact with me. I am sitting up straight and speaking clearly and I am allowing Miguel to finish his thoughts before I start speaking.

Mr. Mateo asks the students to turn to the Conversation Skills chart in their Science folders. Then he directs the partners to follow along on their charts **as he points to the Create prompts and responses on the classroom chart.** <sup>FAAL</sup> "Remember when we used the Create and Clarify prompts to help us discuss what we knew about bears? Today we are going to use the same prompts when we discuss the types of weather we forecast for April. Partner 1, please use one of the prompts, written in green, to ask your partner about his or her weather hypothesis for April. Partner 2, respond using the response written in red. Now we are ready to begin so please put on your headphones." Mr. Mateo then places students into their breakout rooms.

Mr. Mateo circulates around the room and when he wants to listen to a discussion he taps a student on the shoulder and asks them to unplug their headphone. <sup>MGDL</sup> He listens to conversations, redirecting when needed. "Jill, you asked Karem, 'What do you think the weather will be in April?' Karem, you said, 'Cloudy.' Let's look at our responses. How should you begin your response? Look at your chart. Point to April's question. Now look at the response. What should you say?"

Karem responds, "I think it will be cloudy."

"Yes, exactly. <sup>MGDL</sup> You need to respond in a complete sentence, and your Conversation Skills chart can help you." <sup>FAAL</sup>

Mr. Mateo gets the students' attention by stopping the breakout room and bringing the students back to the main Zoom room. He then reminds the classroom students to take off their headphones and look up from their iPads. **He has them look at the Conversation Skills charts on the his shared screen and in their hands and chorally repeat the Clarify prompts along with the responses as he models them.** <sup>FAAL</sup> He asks the students to clarify their weather decisions with their partners. He continues to walk around the room and monitor the discussions. Based on what he hears, he decides that the students are ready to explore the Fortify portion of the Conversation Skills chart. <sup>MGDL</sup>

“Excellent,” Mr. Mateo states as he claps for silence. “Wow! You all were using the Create and Clarify portions of the Conversation Skills amazingly. You really explained your thinking to one another by clarifying your hypotheses.”<sup>MGDL</sup> Are you ready for a challenge? Something that only second graders do?” The students’ overwhelming answer is “Yes, yes!”

“OK, let’s look at the next section of your chart, which is Fortify. Show me your muscles by putting both hands up with your arms bent and say, ‘Fortify!’ He checks that students in the classroom and on the Zoom grid are all participating. ‘Fortify’ means to say what you think and support it with evidence from the text. By fortifying, you are giving your ideas strength. You get to be ‘text detectives’ and use your charts to fortify your ideas.”<sup>FAAL</sup> Being a text detective means connecting your prior knowledge to new knowledge.

Considering what you already know about a topic helps you remember the new knowledge. Now let’s look at the prompts and responses and try them out.” Together the class and Mr. Mateo read the Fortify prompts and responses; Mr. Mateo points to each one on the projected poster as the students read them with him.<sup>DD</sup>

“Now we are going to put the three skills together. Let’s see what this looks like.” Mr. Mateo asks Julia to come up and help him model the discussion. He explains that Julia will have her Conversation Skills chart in front of her, and he will use the poster so that everyone can see what he is doing.

Julia says, “What do you think the weather will be in April?”

Mr. Mateo points to Create on the conversation chart, modeling how to find the response in the Create section. “I think it will be mostly rainy in April.”

Julia says, “Why do you think that?”

Mr. Mateo again models how to find the response in the Clarify section. “I think that because April is in the middle of spring so it’s not yet sunny.”

Julia says, “How do you know that?”

Mr. Mateo continues to model how to find the response in the Fortify section. “In the text that we read, it said that the rain makes the new flowers grow, and we found out that spring is when all the new flowers come up.”

Mr. Mateo again tells students that they will be placed into breakout Zoom rooms with new partners. Once all students are seated, Mr. Mateo asks the class to discuss their forecasts using the Conversation Skills graphic organizer, Create, Clarify, and Fortify. He then launches the breakout rooms. He circulates around the room, stopping at each pair, listening, prompting where needed, giving a thumbs-up, and questioning for clarification or fortification.”<sup>MGDL</sup>

## Fourth Grade Vignette

Ms. Costello's fourth grade class is a hybrid class. Group A is in the classroom on Mondays and Tuesdays and use zoom to connect to the classroom on Thursdays and Fridays. Group B uses Zoom to connect to the classroom on Mondays and Tuesdays and is in the classroom on Thursdays and Fridays. On Wednesdays Ms. Costello uses the time to meet online in small groups with students who need extra support while her other students are working online independently.

The class is starting a life science unit, which will address the Next Generation Science Standards and CCSS Literacy Standards listed below:

LS1.A Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.

LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

CCSS.ELA-LITERACY.RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.

CCSS.ELA-LITERACY.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.

For this unit, Ms. Costello has assigned students four different learning partners.: insect, bird, cactus, and tree. For today's activity, one student from Group A and one from Group B will be paired. An anchor poster of conversation skills is posted on the wall as well as sentence prompts and responses. Each student has their own mini laminated poster set included in their unit packet. She also has an anchor chart on the wall listing norms of interaction (e.g., leaning in, making eye contact, facing the computer screen directly) that she references throughout the unit.

Ms. Costello launches her lesson on a Monday with group A in her classroom and group B zooming in from home, greeting each student as they enter the room or log into zoom. To start the lesson, she asks students to think about the conversation skills and norms of interaction and how well they have been implementing them. She holds up the mini posters and tells students to have theirs beside them so they can reference them during the lesson. She reminds students about the strategies they can use when the conversation stalls and she points to the poster on the wall. She asks a

### Metacognition in Discussion

#### *What I can do when I don't understand*

- I can reread the prompt to refocus my thinking.
- I can summarize my ideas to clarify my thinking.
- I can ask my partner for help to get back on track.

#### *What I can do when my partner doesn't understand*

- I can paraphrase my partner's ideas to help her refocus her thinking.
- I can ask a question to prompt my partner to reconsider her thinking.
- I can explain my thinking to move my partner beyond her misunderstanding.

#### *What we can do when we both need help to move the conversation forward*

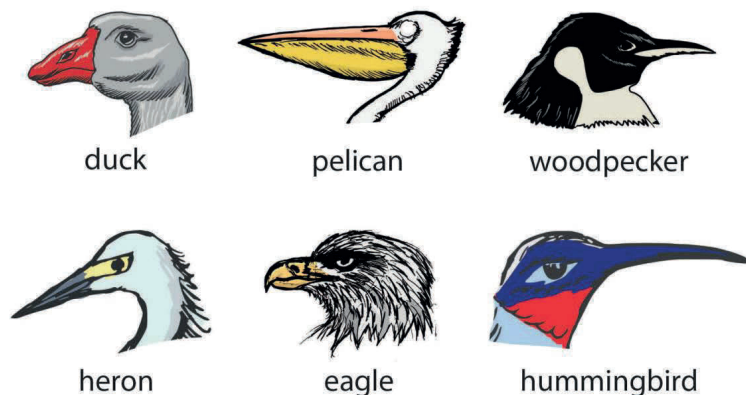
- We can clarify why the discussion has stalled to figure out how to move forward.
- We can retrace the discussion to identify where the breakdown occurred.
- We can explain why we are stuck and ask for help to enable us to move forward.

few students to read the poster. She selects volunteers who are in the classroom as well as those participating via zoom. She then has all students complete a Do Now, highlighting areas where they can improve their participation in today's discussion. She calls on a few students to share their Do Now.

She begins today's lesson by projecting a variety of bird beaks on the screen as a way to engage all students in a disciplinary discussion. She asks the students to take a moment and examine the bird beaks. She asks the question, "What do you notice about these bird beaks?" She has students share out some of the things they notice. "Now I want you to make a prediction of what the bird eats based upon the size and shape of their beak. **Can someone read our definition of prediction that is on our anchor chart?**"<sup>FAAL</sup> Yes, a guess based upon an observation of patterns. Making predictions is an important skill scientists use every day to guide their research. Prediction is one of six basic processing skills in science. I'm asking you to predict because I want you to use your observations of the pictures of the beaks and your prior knowledge to think about the function of the beaks as we begin this unit."

"You would support your prediction by thinking about the size and shape of the beak.<sup>1</sup> I have a sentence frame on the board and in your packet. 'I think the \_\_\_ eats \_\_\_ because the shape of the beak is \_\_\_\_\_. So an example of what you can say is, 'I think the duck eats small fish and small seeds from the water because the shape of the beak is flat and round.'"

She points to the Conversation Skills poster and, using the sentence stems she has provided, models the conversation skills the partners will use. "I notice that the duck's bill is rather flat. What do you notice? I agree it is flat and kind of long. What else do you notice? I notice that the spoonbill and kiwi have really long beaks but are different shapes. Yes, I agree, and I also think...What kind of food do you think the duck eats based upon the shape and size of its beak? Because the beak is flat and rather large, I think it takes in water and small fish. What do you think?"



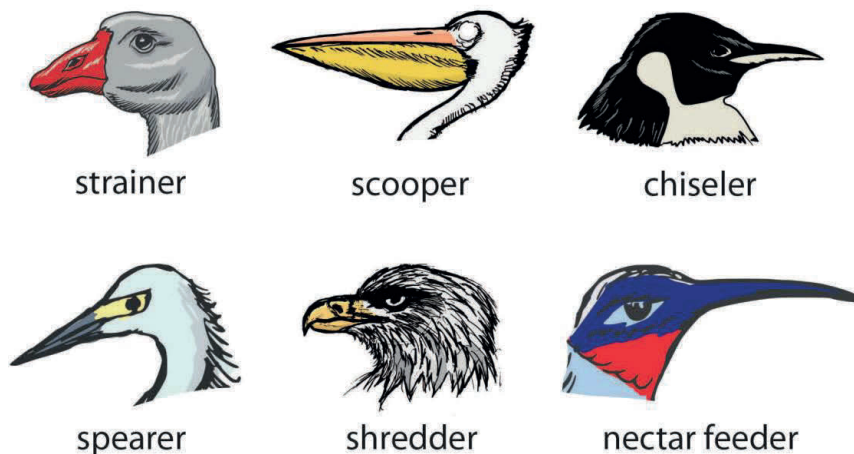
Ms. Costello has classroom students open up their Chrome books and get ready to meet with their cactus learning partners via zoom - with one partner in the classroom and one partner online. She reminds them of their discussion skills by pointing to the poster and the sentence frames. As students are discussing the prompt, she walks around the room listening to discussions the classroom students are having with their zoom partner. She prompts students when necessary regarding their use of the conversation skills and use of the sentence



frames. <sup>MGDL & FAAL</sup> When students have completed the task, she projects a second picture of bird beak, but this one shows the function of the beaks. She holds up everyday objects as examples of each beak (e.g., a kitchen strainer as an example of a strainer, an ice cream scoop for a scooper, an ice pick for a spear) so students can visualize how each beak functions. <sup>FAAL</sup>

She again asks students to work with their learning partners (1) to discuss how this information adds to or changes their prediction and (2) to restate their prediction based upon the new information. <sup>FAAL & DI</sup> Again, Ms. Costello walks around the room to monitor students' responses. She is listening to see what adjustments she needs to make to the rest of the lesson to respond to any misconceptions. <sup>MGDL</sup>

Julie is in the classroom and is working with Ramon via Zoom. They are having difficulty restating their prediction based upon the new information. Ms. Costello prompts them by directing them to the sentence frames in their packets, "My prediction about the \_\_\_\_ has changed because \_\_\_\_\_. I now know that the \_\_\_\_ beak's function is to \_\_\_\_\_ and the shape of it allows it to function that way." <sup>MGDL</sup>



After some students share their predictions with the class, Ms. Costello asks, "If I were a pelican and I had a chisel beak, how would that affect what I ate and where I ate?" Through her questioning, she guides both A and B students to help them understand that there is a connection between the two. <sup>MGDL</sup> She moves to the day's learning target: students will be able to explain external structure and function of plants and animals and how they support survival, growth, behavior, and reproduction. She then deconstructs the learning target and defines the vocabulary words: function (what it does), structure (physical appearance), and external (outside). <sup>FAAL</sup> She connects the bird beaks exercise to external structure and function of an animal and to what many students said regarding survival and growth.



She then displays pictures of plants and animals (giraffe, rose thorns, polar bears, spider web, vines, water lily) and has students discuss with their learning partners what they notice about their structure. Then she has them think about and discuss the function and how it supports survival, growth, behavior, and reproduction. She has provided them with sentence stems in their packet and asks them to take them out and use them: The \_\_\_\_ has \_\_\_\_ to help them \_\_\_\_\_. This structure supports their \_\_\_\_\_. She asks the student partners to have one of them be a recorder in order to capture their thinking. <sup>FAAL</sup>

When students finish, she asks two students to come to the front of the class and be in a fishbowl. She projects a new picture and asks them to discuss it as they did before. She asks the rest of the class to listen for clarifying and fortifying moves the students make. Once they finish, she asks the pair of students what they thought they had done well regarding their conversations skills and what they thought they could improve on. She then gives the rest of the class the opportunity to provide additional feedback.

She concludes the lesson by explaining that in this unit they will also be looking at internal structures and functions of the plants and animals and how they support survival, growth, behavior, and reproduction. The unit will conclude with them selecting one external and one internal structure of an animal and constructing an argument regarding how these structures help the animal grow, survive, behave, or reproduce. She asks students, "What stuck with you today?" and has them answer the question on their white boards. <sup>MGDL</sup> She has both groups of students hold up their white boards so she can check for understanding.

## Chapter

# Teaching with and for Metacognition in Disciplinary Discussions

*Susan O'Hara, Robert Pritchard and Debi Pitta*

## Abstract

Teaching metacognitively, which involves teaching *with* metacognition and teaching *for* metacognition, is critical for learners of any age. *With* enables teachers to gain awareness about and control over how they think and teach, and to monitor, evaluate, and adjust their instructional practices in accordance with specific students, goals and contexts. *For* enables teachers to design instruction that will develop and activate their students' metacognition, enabling them to be aware of what they know and do not know, and take action to address flaws or gaps in what they know. Our research findings, based on empirical studies conducted in a variety of educational settings, have identified effective instructional practices for teaching metacognitively. This chapter focuses on practices that support the metacognition of learners engaged in disciplinary discussions. This emphasis addresses a significant void in the research literature which more commonly targets metacognition in learning generally or applied specifically to reading and writing.

**Keywords:** teaching with metacognition, teaching for metacognition, teaching frame, disciplinary discussions, instructional practices

## 1. Introduction

Teaching metacognitively, which involves teaching with metacognition and teaching for metacognition, is critical for learners of any age. Teaching with metacognition enables teachers to gain awareness about and control over how they think and teach by planning, monitoring, evaluating, and adjusting their instructional goals and teaching strategies in accordance with their students' needs and the socio-cultural context. Teaching for metacognition enables teachers to design instruction that will develop and activate their students' metacognition, enabling students to be aware of what they know and do not know by engaging in reflective processes, and to take action to address flaws or gaps in what they know by employing self-regulation strategies.

Given the essential role that teaching metacognitively plays in the professional growth of teachers and the academic development of students, a need exists for a tool to support teaching with and for metacognition. Our research findings, based on empirical studies conducted in a variety of educational settings [1–4], have identified such a tool: The SOAR Teaching Frames for Literacy. This chapter focuses on the SOAR Teaching Frame for Disciplinary Discussions and instructional practices

that support the metacognition of learners engaged in academic conversations, e.g., face-to-face interactions, online dialogues, and written conversations. This emphasis addresses a significant void in the research literature which more commonly targets metacognition in learning generally or applied specifically to reading and writing.

## 2. What is SOAR?

SOAR, which stands for strategic observation and reflection, is not a curriculum or a set of instructional strategies. SOAR is the lens teachers look through as they plan, teach, reflect upon, and elevate their teaching practice by engaging in cycles of strategic observation and reflection. SOAR has emerged from more than a decade of systematic research and development designed to identify the essential practices that teachers can use to drive learning across disciplines. More specifically, we identified research-based essential practices for disciplinary discussions through analyses of data from Delphi panel studies of expert consensus on disciplinary literacy instruction across content areas [4–7], video observations of classroom instruction [1], existing instructional practice protocols with established reliability and predictive validity [2, 8–10], and an extensive review of the research literature on effective language and literacy instruction [11–15]. One High-Impact Practice emerged as having significant potential to enhance students' ability to engage in student-to-student academic discourse. We call this practice disciplinary discussions.

Our research also suggests that this essential High-Impact Practice does not operate in isolation. Instead, effective teachers enact a set of dynamic instructional moves during instruction in support of the High-Impact Practice. We labeled this set of three instructional moves Cross-Cutting Practices.

Facilitating acquisition of academic language: this practice focuses on structuring, strengthening, and supporting the acquisition and use of the academic language needed to participate in disciplinary discussions [13, 16–18].

Fostering metacognition for disciplinary learning: this practice focuses on the degree to which a teacher visibly enacts and deconstructs metacognitive processes and strategies that foster students' metacognitive knowledge and their ability to engage in academic discourse [19, 20].

Monitoring and guiding disciplinary learning: this practice focuses on how effectively a teacher monitors and guides disciplinary learning as well as adjusts and supports disciplinary discussions to meet the current needs of all students in the classroom [21, 22].

Finally, in preparation for enactment of High-Impact and Cross-Cutting Practices, teachers employ a Foundational Practice.

Designing instruction for disciplinary thinking and understanding: this practice focuses on the design of lessons and learning tasks to promote disciplinary discussions and support the High-Impact Practice. This practice also focuses on how the teacher establishes high expectations and fosters in all students the willingness to participate in intellectually rigorous tasks that require academic discourse [21, 23–26].

To illustrate the interconnectedness of the practices, we organized them into a Teaching Frame consisting of the High-Impact Practice supported by the Cross-Cutting and Foundational Practices (see **Figure 1**). The frame is designed to help instructors understand and implement the High-Impact Practice that drives student learning, while simultaneously enacting a set of dynamic instructional moves in support of the High-Impact Practice and taking the foundational planning steps needed to do this well. This Teaching Frame provides a common language around

| Disciplinary Discussions |  |  |  |
|--------------------------|--|--|--|
| HIGH-IMPACT PRACTICE     | <ul style="list-style-type: none"><li>• Build disciplinary conversation skills</li><li>• Provide extended and supported opportunities for students to engage in disciplinary discussions</li></ul>   |  |  |
| CROSS-CUTTING PRACTICES  | <p>Facilitating Acquisition of Academic Language</p> <ul style="list-style-type: none"><li>• Introduce and/or refer to the academic language demands of texts and tasks</li><li>• Provide extended and supported opportunities for students to acquire and use the features of academic language</li></ul>   | <p>Fostering Metacognition for Disciplinary Learning</p> <ul style="list-style-type: none"><li>• Visibly enact metacognitive processes and/or strategies students are expected to use in support of disciplinary learning</li><li>• Deconstruct metacognitive processes and/or strategies that support disciplinary learning</li></ul> | <p>Monitoring and Guiding Disciplinary Learning</p> <ul style="list-style-type: none"><li>• Monitor learning and adjust instruction, supports, and disciplinary tasks to meet student needs</li><li>• Provide written and/or oral feedback during lessons to promote disciplinary learning</li></ul> |
| FOUNDATIONAL PRACTICE    | <p>Designing Instruction for Disciplinary Thinking and Understanding</p> <ul style="list-style-type: none"><li>• Set disciplinary learning targets that are aligned with ELA/Literacy CCSS and the target high-impact practice</li><li>• Structure and connect tasks that support the learning targets</li><li>• Establish high expectations that support the learning targets and maintain the intellectual rigor of classroom activities and tasks</li></ul> |  |  |

Figure 1.  
SOAR teaching frame.

instruction at a grain size that allows instructors from kindergarten to higher education to meaningfully plan and reflect individually or collaboratively.

3. Using SOAR to teach with metacognition

By using a SOAR Teaching Frame—in this case, the SOAR Teaching Frame for Disciplinary Discussions—as a lens to plan, teach, and reflect upon their instructional practice, teachers are by definition teaching with metacognition. That is, they are gaining awareness about and control over how they think and teach by using the High-Impact, Cross-Cutting, and Foundational Practices to plan, monitor, evaluate, and adjust their instructional goals and teaching strategies. To support teachers through this process we have developed an implementation rubric that is aligned with each practice in the disciplinary discussions teaching frame. Table 1 contains the section of the rubric that is aligned with the High-Impact Practice.

Moving along the rubric from “no implementation” to “full implementation” enables a teacher in the planning stage to focus specifically on what she needs to include in her lesson. For instance, if her students are still developing the conversation skills necessary to engage in disciplinary discussions (Element 1), the implementation rubric will help the teacher recognize the need to introduce and refer to those skills as well as provide support for students to use them in tasks and activities. Then, when the lesson is over and the teacher is reflecting on how successful it was, the rubric can help her recognize what worked and what did not work. For instance, she may realize that the supports she used enabled some students to use the conversation skills to engage in a discussion, but other students clearly needed something more. This insight will help the teacher adjust her instruction during the next lesson.

We are currently using the SOAR Teaching Frames in professional learning programs for teachers, coaches, and instructional leaders in partner schools and school districts across the United States. We have also brought the SOAR model and

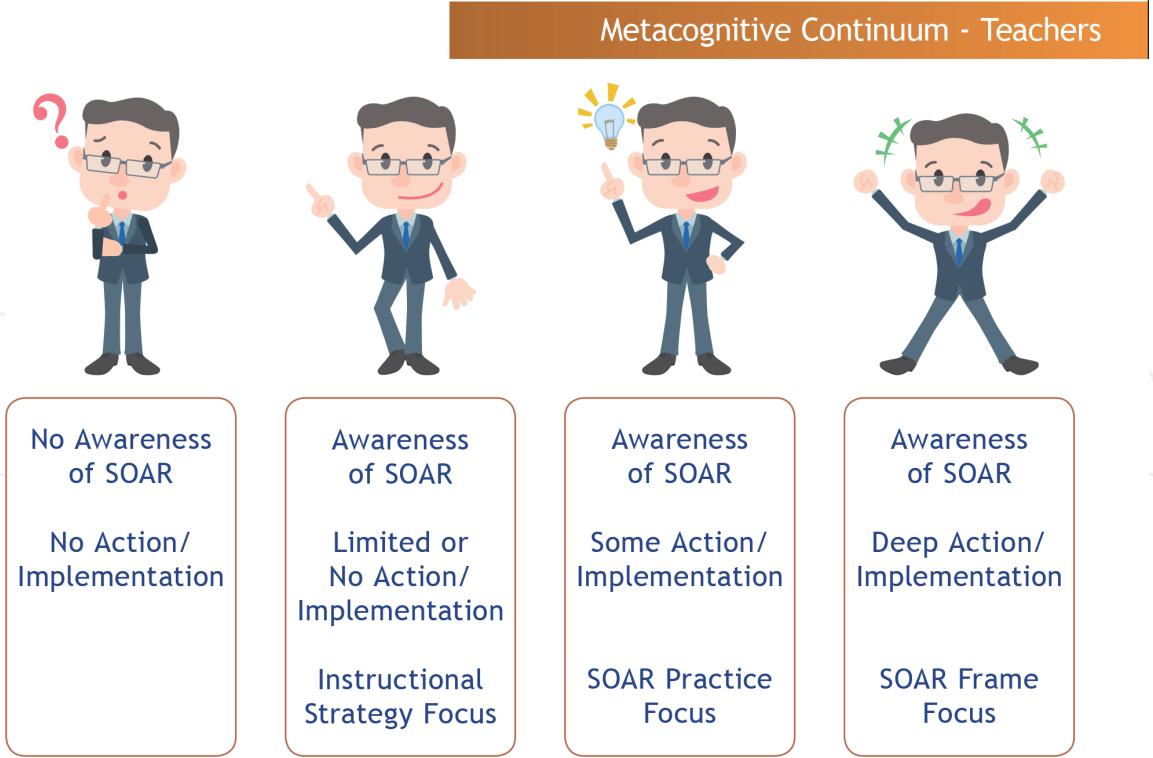
|  | No implementation  |  |  | Full implementation  |
|--|--|--|--|--|
| ELEMENT 1: Build disciplinary conversation skills  | Teacher does not introduce or refer to disciplinary conversation skills. | Teacher introduces and/or refers to disciplinary conversation skills, but does not provide support for students to use them during tasks and activities.   | Teacher introduces and/or refers to disciplinary conversation skills and provides support to enable most students to use them during tasks and activities.   | Teacher introduces and/or refers to disciplinary conversation skills and provides support to enable all students to use them during tasks and activities with diverse partners.  |
| ELEMENT 2: Provide extended and supported opportunities for students to engage in disciplinary discussions | Teacher does not provide opportunities for disciplinary discussions.     | Teacher provides limited and/or unsupported opportunities for students to engage in disciplinary discussions. Routines for disciplinary discussions are not evident, or students are not required to use them during tasks and activities. | Teacher provides supported opportunities for students to participate in disciplinary discussions. Routines for disciplinary discussions are evident, and teacher provides support to enable most students to use them during tasks and activities. | Teacher provides extended and supported opportunities for students to participate in disciplinary discussions. Routines for disciplinary discussions are evident, and teacher provides support to enable all students to use them during tasks and activities. |

Table 1.  
Implementation rubric: disciplinary discussions.

materials to Teacher Preparation Programs and New Teacher Induction Programs. Based on these experiences we have identified stages of awareness and action that instructors typically go through when using SOAR to teach with metacognition (see **Figure 2**).

The first stage represents someone who is not familiar with SOAR and therefore is unable to use it as a lens to plan, teach, and reflect. The second stage depicts someone who has been introduced to SOAR but who is still learning how to use a teaching frame and the instructional practices that support the metacognition of learners engaged in disciplinary discussions. Teachers at this stage of the continuum tend to equate SOAR with the use of certain instructional strategies (e.g., Layering Text, What Makes You Say That?) rather than a specific High-Impact, Cross-Cutting or Foundational Practice. Teachers at the third stage of the continuum have developed a deeper understanding of SOAR as evidenced by their ability to use a High-Impact, Cross-Cutting or Foundational Practice as a lens to plan, teach and reflect, but because their focus is at the practice level, the metacognitive impact of the planning-reflecting process is limited. Finally, teachers at the last stage have developed an understanding of how all of the practices of the SOAR Teaching Frame work together and can be used as a lens to plan, monitor, evaluate, and adjust their instructional goals and teaching strategies in accordance with their students’ needs and the sociocultural context. Using SOAR in this way to teach with metacognition has the greatest impact on the academic development of students.





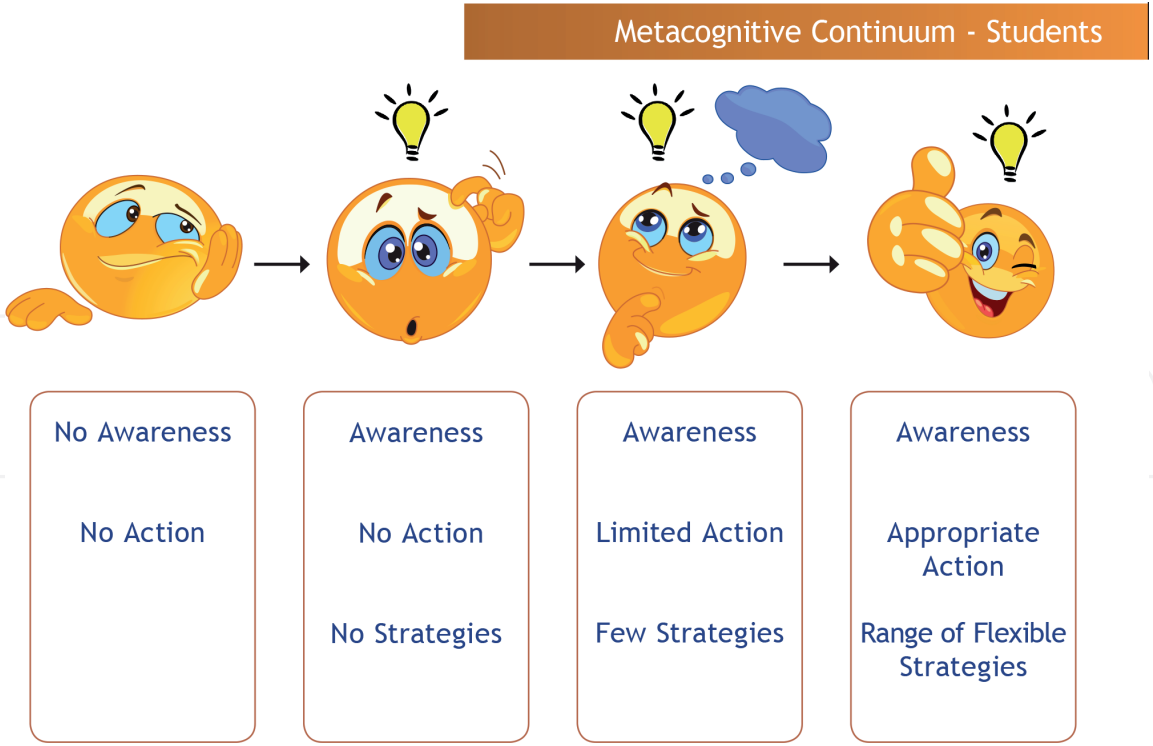
**Figure 2.**  
*Metacognitive continuum—teachers.*

**4. Using SOAR to teach for metacognition**

Our research and professional development experiences over the past decade have convinced us that many teachers struggle to acquire and apply the conceptual understanding and skills necessary to develop students’ metacognitive knowledge; in other words, the ability to teach for metacognition. One reason for this is that reflecting on and improving performance on a task is easier when the task requires physical action, e.g., hitting a golf ball. You can watch a video of yourself engaged in this task or listen to feedback from a coach who observed you. Cognitive tasks, on the other hand, are invisible and cannot be directly observed, making it harder for students to reflect on their performance and take action to correct it when necessary. So, the instructional challenge most teachers face is how to help students improve their performance on tasks that are dependent upon invisible cognitive progresses. Our research indicates that SOAR can support teachers in this endeavor [3, 27].

As we explained in the preceding section, the Disciplinary Discussions Teaching Frame as a whole—High-Impact, Cross-Cutting, and Foundational Practices—provides the lens that enables instructors to teach with metacognition. Using SOAR to teach for metacognition requires a narrower focus: the Cross-Cutting Practice of Fostering Metacognition for Disciplinary Learning. This practice’s emphasis on visibly enacting and deconstructing metacognitive processes and strategies enables teachers to design instruction that will develop and activate their students’ metacognition. Students will become aware of what they know and do not know by engaging in reflective processes, and they will be able to take action to address flaws or gaps in what they know by employing self-regulation strategies.

Consistently engaging students in reflective processes and explicitly teaching metacognitive strategies are at the heart of teaching for metacognition. But as is the case with any learning, not all students progress at the same pace. We have identified stages of awareness and action that learners typically go through as they develop their metacognitive abilities (see **Figure 3**).



**Figure 3.**  
*Metacognitive continuum—students.*

The first stage represents a student who does not reflect on his learning and is therefore unaware of how well or poorly he is doing on the assigned task. And because awareness triggers action, he cannot take action to correct any problems that may arise. For instance, think of a student who does not recognize, and therefore mispronounces, many words as he attempts to read a story aloud. But because he does not realize he is mispronouncing them he does not stop to correct himself. This student was unaware that he was not reading the words correctly, so he did not/could not take any action, i.e., use reading strategies to address the problem.

The second stage depicts a student who is reflective, that is, he is aware that he is experiencing problems with an assigned task. However, this student is unable to take any action to address the problem because he has not been taught strategies to use in this situation. Imagine a reader who, unlike one at the first stage of the continuum, is aware that he does not recognize the words he is reading. However, this reader is unable to take action because he has not been taught reading strategies to use when this occurs, e.g., use phonics to sound out unknown words.

Students at the third stage of the continuum have developed a deeper understanding of metacognition as evidenced by their ability to use strategies when problems arise. The challenge these students experience is that they have a limited range of strategies to use, so they struggle if the one or two strategies that they have ownership of do not prove to be successful. For instance, a reader at the third stage realizes that he has trouble recognizing and pronouncing certain words, but he has only been taught (or has only learned) to use phonics to sound out unknown words and, when that does not work, he asks the teacher for help. Students at this stage are certainly progressing metacognitively, but they are not yet at the level where they can apply a range of strategies flexibly and independently.

Finally, students at the last stage have become aware of what they know and do not know by engaging in reflective processes, and they are able to take action to address flaws or gaps in what they know by employing a variety of self-regulation strategies flexibly and independently. A reader at this stage, who encounters words he does not recognize and is unable to pronounce, is able to try a range of strategies.



For instance, he is confident of his ability to use phonics to sound out words, but he knows that is not the best strategy to use with polysyllabic words. So, when he encounters “photosynthesis” he breaks the word into parts using the morphological skills his reading teacher taught him.

## 5. Teaching for metacognition in disciplinary discussions

Through our research and work with educators in schools we have identified key stages that represent what teachers need to do when teaching for metacognition in disciplinary discussions. These five stages begin with helping students understand what metacognition is and progress through student reflection on their thinking, understanding metacognitive strategies, and then applying them independently. **Figure 4** outlines these five stages. Below we provide an explanation of each stage, a scenario to illustrate what this might look like in instruction, and some strategies teachers can use to implement these ideas in their teaching.

### 5.1 Introducing metacognition

Teaching for metacognition in disciplinary discussions must begin with an explicit explanation of what we mean by metacognition. In our experience “thinking about thinking” is too abstract and vague a definition to resonate with most students. Our work with instructors and learners across the grade level spectrum has led us to this: metacognition is awareness of what you know and do not know, and the action you take to address flaws or gaps in what you know. The following scenario demonstrates how a teacher who has worked with us introduces the concept to his students and provides a model that others can adapt for their settings.

*Scenario for introducing metacognition:* Mr. Carter is introducing metacognition to his young students. He says, “I have a really big word I want us to know and understand. It is metacognition. Say it with me, friends. Metacognition. Has anyone ever heard that word before? A few of you. I am going to write it on the whiteboard. Let’s clap it out. Met-a-cog-ni-tion. Excellent. It has five syllables.

One part of metacognition is being aware of what you know and what you don’t know. An example would be us learning our high frequency words. We each have our stack of words. When we can read them automatically, we move them out of our stack. We know that we know those words. The words that are left in our stack are the words we don’t know well. So, I am aware of which words I know and which words I don’t know. That is one part of metacognition. I am going to draw a lightbulb here to represent us being aware of what we know and don’t know.

The other part of metacognition is knowing what action to take to learn what you don’t know. Let’s think about the high frequency words we still need to learn. What can we do to learn them? What action can we take? Talk to a neighbor and see what ideas you can come up with.” Students share out some ideas like practicing more and looking for the words when they read. “Very good. Those are all actions you can take. I am going to draw the brain driving a car to represent the action we are taking to learn what we don’t know.

So, metacognition is being aware of what you know and don’t know and then taking action to learn. This anchor chart (see **Figure 5**) will help us as we continue to work on our metacognition. Turn to your neighbor and explain what metacognition is.”

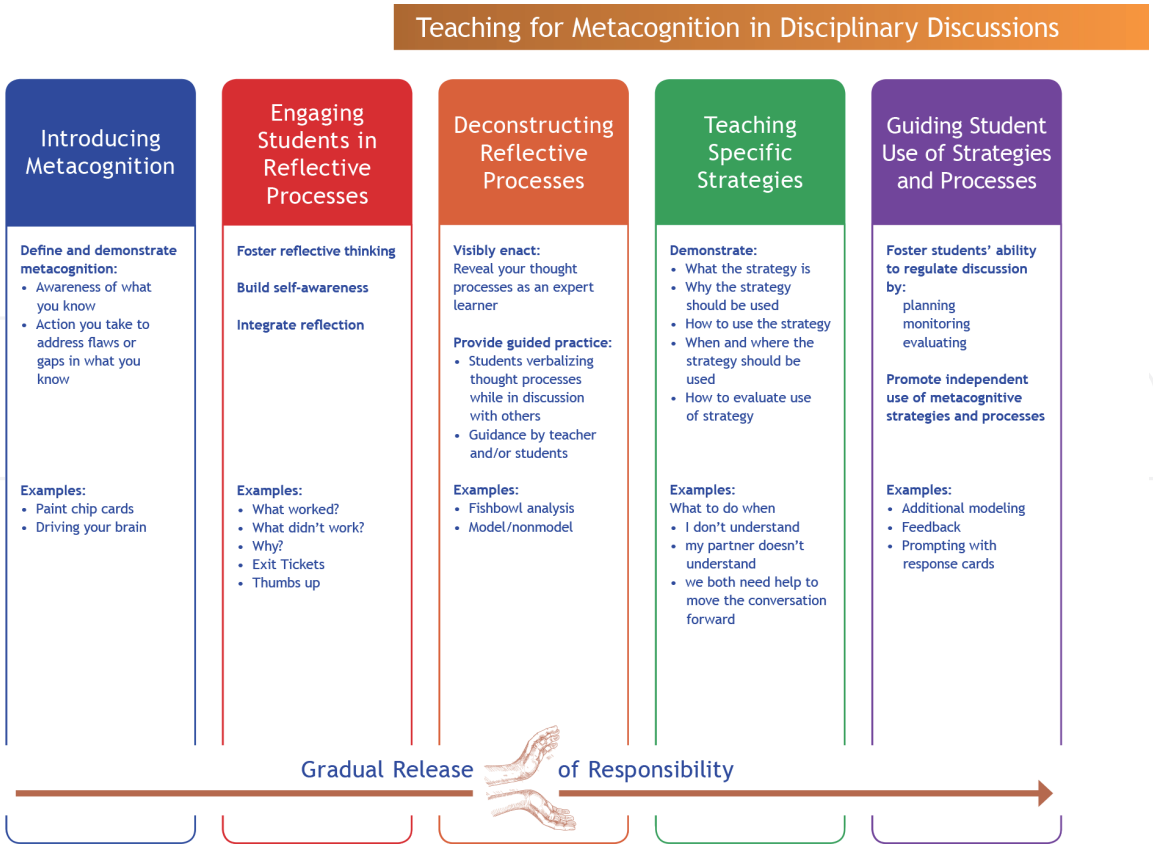


Figure 4. Stages in teaching for metacognition.

In addition to an anchor chart a teacher can demonstrate metacognition using paint chip cards with different gradations. (See Figure 6.) The lighter colors would represent little or no understanding or knowledge while the darker colors would represent stronger understanding or knowledge. Once students are aware of their level of understanding or knowledge, they take action to “drive their brain” to gain more. This visual can also be used for older students.

5.2 Engaging students in reflective processes

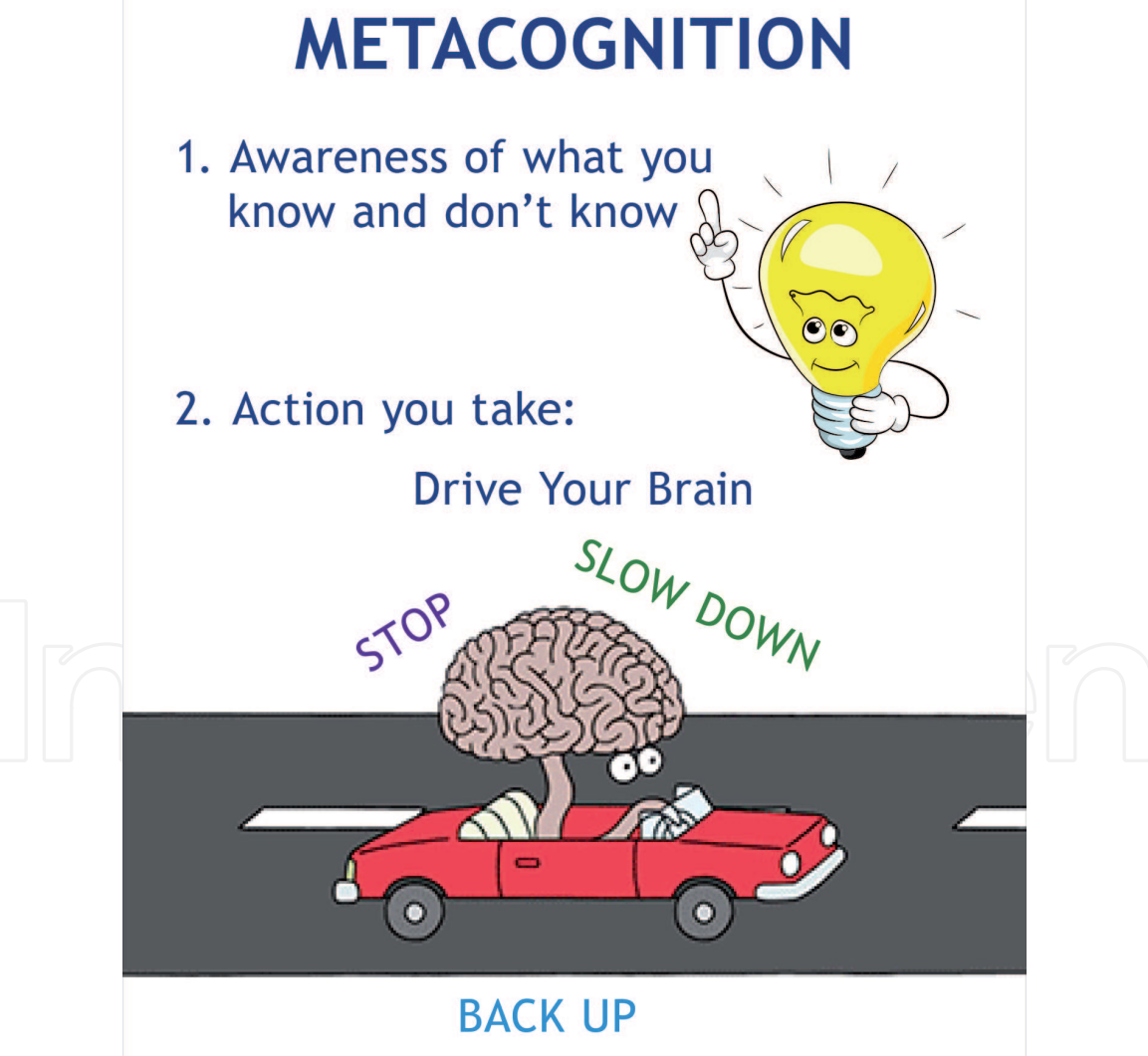
Engaging students in reflective processes is the next step in developing students’ metacognitive knowledge of how they learn—their knowledge of themselves as learners, of strategies, and of tasks. It builds the **awareness** aspect of metacognition without which there can be no strategic **action**. Asking questions such as “What worked in your discussion?,” “Did you deepen your understanding of the topic?,” and “What could you do differently in your next discussion?” fosters reflective thinking and helps build self-awareness. When teachers consistently and systematically integrate reflection into their teaching, it permeates the curriculum and gets built into their daily teaching activities. The teacher in the following scenario has done this successfully with her class.

*Scenario of engaging students in reflective processes:* Ms. Peck has already introduced her students to metacognition. She is now working on having them be more reflective about their discussions in order to improve upon them. Students have just completed a discussion with their partners. She distributes a reflection sheet that has these prompts: What worked? What didn’t work? And why?

“You are all getting so much better in your discussions. Today I want us to think more deeply about our discussions and how each of you did. The first prompt is ‘What worked?’ Think about what worked in your discussion with your partner. Some things to consider might be: Did you both take turns? Did you both share your ideas? Did you ask each other clarifying questions?

The next prompts ask, ‘What didn’t work?’ and ‘Why?’ Think about your discussion. Did it stall? Did you stay on topic? Did you fortify your discussion? Did you help each other get better? So, with your partner, discuss each of these prompts to reflect on how your discussion went.”

At this stage in teaching for metacognition, there are more strategies to help students become engaged in self-awareness. One strategy is a metacognitive “Do Now” which is given to students at the beginning of class. It is a list of actions related to the task they will be doing (in this case engaging in a discussion), and students mark which ones they will attempt to improve upon during their discussion. (See **Figure 7.**) At the end of the lesson, students return to their Do Now and reflect on how they improved in those areas.



**Figure 5.**  
*Metacognition anchor chart.*

A strategy that moves students to a deeper level of reflection is a strategy checklist. (See **Figure 8.**) The first column is a list of discussion strategies followed by an additional 3–5 columns that students check to indicate if they used each strategy at

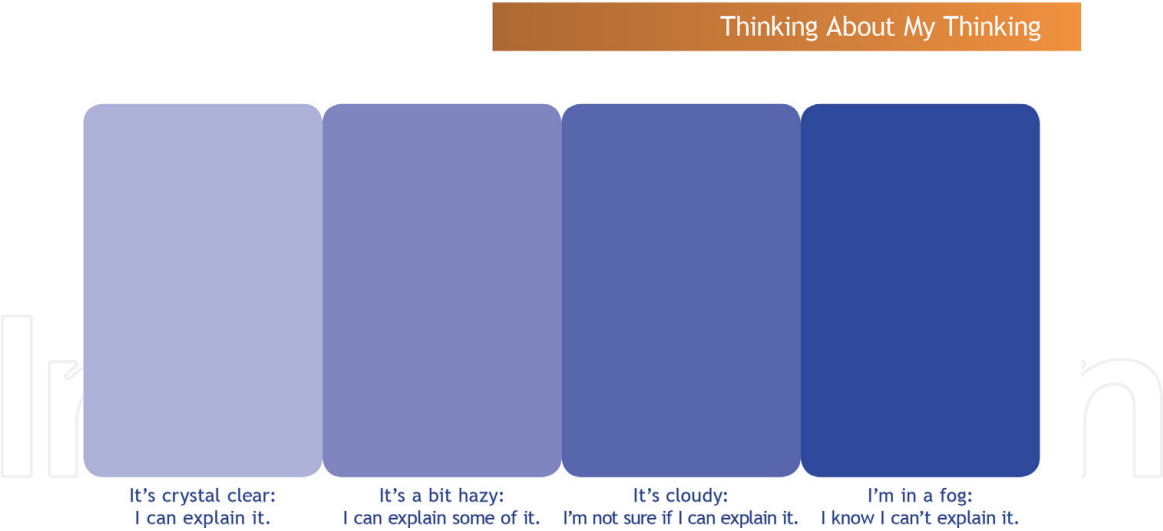


Figure 6.  
Paint chip cards.

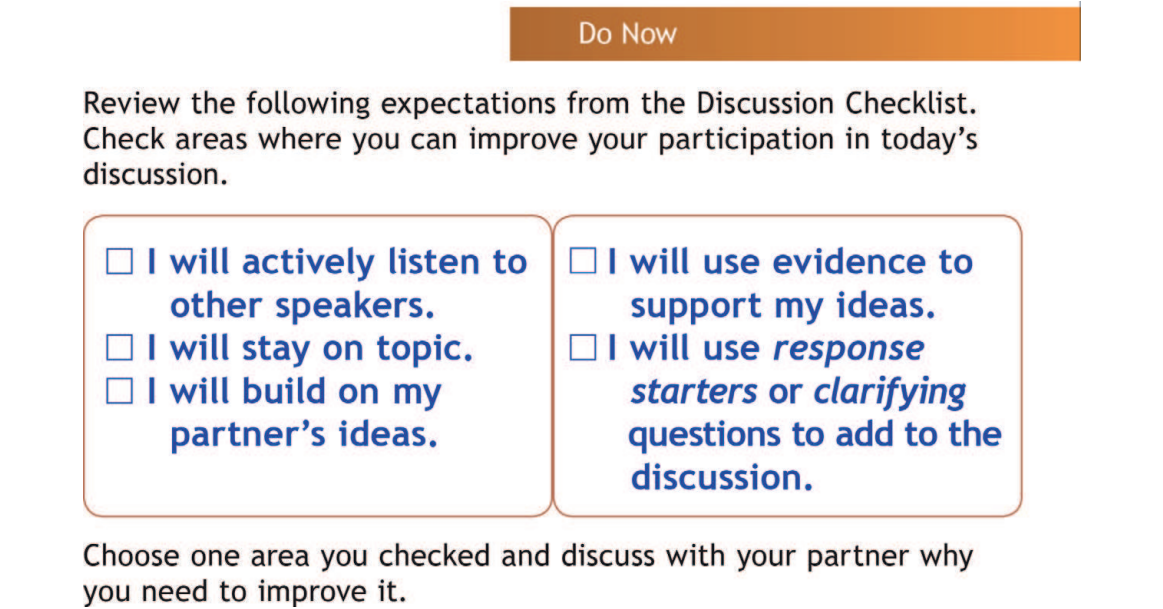


Figure 7.  
Do now.

different points in the lesson. A different checklist could ask students to indicate whether “I did it well,” “I need to work on this skill,” or “I need help in using this strategy.” Students complete this checklist at the end of the discussion.

### 5.3 Deconstructing reflective processes

Modeling your own thinking, i.e., revealing the thought processes of an expert learner, is an essential element of effective teaching because it helps students develop their own metacognitive abilities. However, not everything teachers label as modeling is consistent with this stage in teaching for metacognition. For instance, using a think aloud to verbalize the procedural steps of a learning task is not the same as visibly enacting and deconstructing the underlying thought processes required to complete the task. It is the latter that provides learners with the scaffolded support they need to develop their metacognitive abilities and ultimately become more independently learners. The scenario that follows illustrates how a



| Discussion Strategy Checklist                    |                      |                      |                      |                      |                      |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|
| When I didn't understand ... this is what I did. | 1 <sup>st</sup> Time | 2 <sup>nd</sup> Time | 3 <sup>rd</sup> Time | 4 <sup>th</sup> Time | 5 <sup>th</sup> Time |
| Raised my hand                                   |                      |                      |                      |                      |                      |
| Waited for teacher to call on me                 |                      |                      |                      |                      |                      |
| Told the teacher I didn't understand             |                      |                      |                      |                      |                      |
| Asked a question to help me understand           |                      |                      |                      |                      |                      |
| Stopped trying to understand                     |                      |                      |                      |                      |                      |
| Disrupted the lesson                             |                      |                      |                      |                      |                      |
| Other  |                      |                      |                      |                      |                      |

**Figure 8.**  
Discussion strategy checklist.

teacher can help students verbalize their thought processes while engaged in discussion with others.

*Scenario for deconstructing reflective processes:* Mr. Vu is working with his students on strengthening their reflective processes regarding discussions. “Turn to your partner and explain how our self-reflection has strengthened your discussions.” Students then share out how it has helped them be aware of what they are doing well and the gaps that they need to strengthen. “Today, I want to demonstrate some things you can do to continue to strengthen your discussion and co-construct your knowledge with your partner. I am going to be partner A and all of you are going to be partner B. (See **Figure 9**.) We are going to discuss our article: ‘Species at Risk.’ The prompt is ‘Discuss the reasons the Monarch butterfly has decreased its population. I’ll start.’”

Teacher: “One reason that the monarch butterfly population is dropping is due to climate change. Now what can you, partner B, say to me. Joaquin?”

Class (represented by Joaquin): “I could say another reason is pesticides.”

Teacher: “That is a correct. You could state another reason. Is there something else partner B could say? Yes, Isabelle.”

Class (represented by Isabelle): “I could ask you to elaborate.”

Teacher: “Yes, we can discuss climate change more, so we make sure we both understand it before we move on to the next reason. This helps deepens our discussion. So, I will respond to Isabelle. ‘I think that weather is always changing. We are having bigger storms and hotter temperatures. The monarch butterfly migrates from Mexico to the upper United States, over 3000 miles.’ Now, do you think I should ask you, partner B, a question? ... Yes, now I can say ‘What was another reason the monarchs are decreasing?’ Yes, Joaquin.”

Class (represented by Joaquin): “Pesticides is another reason they are decreasing in numbers.”

Teacher: “I don’t remember reading that in the article, so I am going to ask Joaquin, ‘Can you show me where it says that in the text?’”

Class (represented by Joaquin): “Right here it says, ‘These include habitat loss and pesticides.’”

Teacher: “I need to figure this out. The article says habitat loss and pesticides, so I want to see if we can figure out these two things. I am going to ask you,

partner B, a question to help me understand this more. ‘What do you think it means by habitat loss?’ How can you respond? Georgia.”

Class (represented by Georgia): “In science we studied that a habitat is where animals live. So, where the monarchs live is being destroyed or isn’t around anymore.”

Teacher: “Good job, Georgia. Can you follow up with a question to me?”

Class (represented by Georgia): “Do you agree with me?”

Teacher: “That works, Georgia. I can also paraphrase what you just said. ‘So, you think that monarchs are decreasing because their habitat has changed.’ I am going to check with Georgia to see if I am correct. She is nodding so I am going to add a question. ‘So, do you think the pesticides have affected the habitat?’”

Class (represented by Georgia): “Yes. Were there any other reasons mentioned in the article?”

Teacher: “Good job checking to see if we have discussed all the reasons, Georgia. I am going to see if we can summarize the reasons. ‘I think that is all of them. Can we summarize what we just discussed?’”

Class (represented by Georgia): “Throughout the discussion we made decisions about how to deepen our understanding through our discussion.”

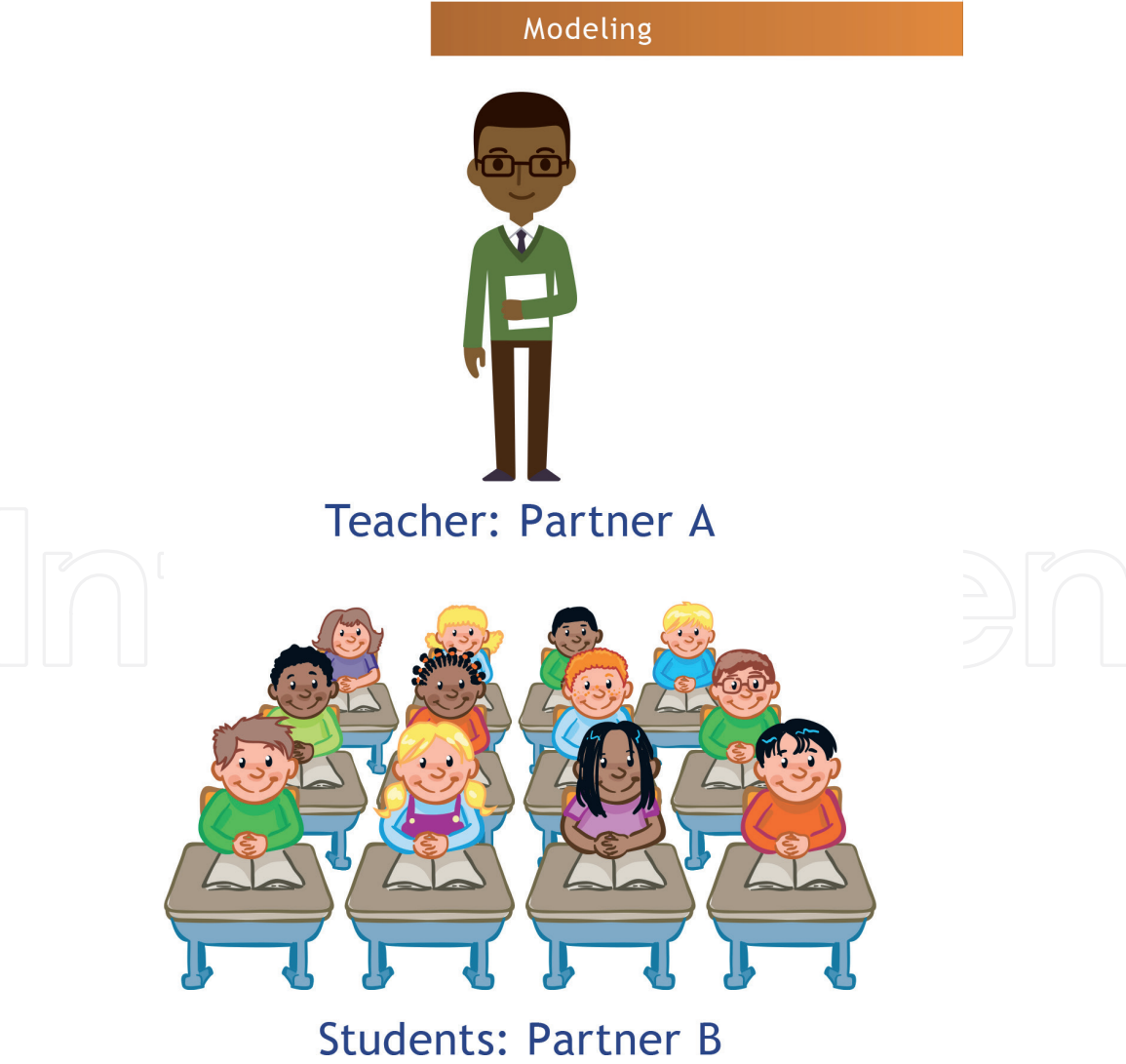


Figure 9.  
Modeling.

In this scenario, the teacher utilized a model as a way for her students to “see and hear” what a good conversation sounded like. Another strategy we have found to be effective is using a non-model, i.e., a poorly constructed conversation. The teacher provides students with a non-model and asks them to work in pairs to improve it. Initially, the teacher works with the entire class and a projected conversation, asking them first to improve one aspect of the discussion. She then asks them to focus on another aspect of the conversation before increasing the rigor of the task by having them work independently with a partner.

A similar strategy is the fishbowl where 2–4 students sit in the middle of the classroom and engage in a discussion while the remaining students sit in a circle observing them. Based upon what the teacher has observed in previous classroom discussions, she assigns specific things the observers should be looking for while the fishbowl is going on. For example, the teacher might ask different sets of students to listen for certain discussion skills (e.g., clarifying an idea, adding on to an idea, providing evidence for an idea) while others listen for norms of interaction (e.g., looking at the speaker, taking turns, being respectful). When the discussion is over, the teacher and students debrief what students notice during the activity. The teacher uses this opportunity to specifically point out the talk moves students made to enrich the discussion.

#### 5.4 Teaching specific strategies

A great deal of research indicates that the explicit teaching of strategies to students will improve student learning and help them become more independent learners [28–30]. Our work with the SOAR Disciplinary Discussions Teaching Frame has also demonstrated that introducing and demonstrating specific metacognitive strategies students can use when engaged in discussions significantly improves their ability to recognize and address breakdowns that occur and ultimately keep the discussion (and learning) on track [3, 27]. The key to the successful teaching of strategies is explicitly demonstrating what the strategy is, how to use it, and when and why to use it. In the scenario that follows the teacher is introducing one of our research-based discussion strategies to her students.

*Scenario for teaching specific strategies:* as a class routine, Ms. O’Rourke has her students reflect on their discussions. She now wants to teach them a strategy she thinks will strengthen their discussions further. “You have really improved with your discussions because you have been reflective about what you are doing well to deepen your discussions and about those areas that need improvement. Nonetheless, I have noticed that there are times when your discussions seem to stall or shut down, so I want to teach you some strategies to help. What seems to happen is one of you stops talking because you do not know what else to say or you are confused about the topic. Let us review how we have defined metacognition. Turn to your partner and discuss what metacognition is and give an example when you have acted metacognitively.”

After students have had a chance to discuss, Ms. O’Rourke has them share. Then she says: “So, as you stated, you first need to be aware that your discussion has stalled and that you do not understand what to do. Once you are aware, you need to take some action to get the discussion moving again. I have



a reference chart here on the white board for us to discuss. (See **Table 2.**) One thing you can do is reread the prompt. This gives you an opportunity to refocus your thinking and come up with some ideas to add to the discussion and move it along. It also gives you a moment to clarify the prompt if necessary. Another strategy is you can summarize what you and your partner have said so far. By summarizing the discussion, you are ‘retracing’ the discussion to see where it broke down. You might find that a question or comment took your discussion off topic which caused it to stall. The third strategy is to ask your partner for help to get back on track. You could say, ‘I can’t think of anything else to say. Can you ask me a question or make a comment to get us moving again?’ Or you could say, ‘I am not sure if I’m on the right track with our discussion. Can you help me get back on track?’

I really want you to be thoughtful in your discussions and use these strategies if you get stuck. When you have completed your discussion, I am going to ask you and your partner to process your use of these strategies: Did you reread the prompt, summarize the discussion, and/or ask your partner to help?”

It is important for teachers to monitor student discussions to be able to determine what strategies need to be demonstrated and why, when, and how to use them. In the scenario above, Ms. O’Rourke demonstrated for her students what they could do when one partner (partner A) realizes their discussion became stalled because he is not understanding.

Another possibility for why the discussion breaks down and students are not going deeper to co-construct their knowledge can be because partner A realizes that partner B is not understanding. The third possibility is that both partner A and partner B realize the discussion has stalled and they need help to move forward. In both of these cases, the teacher would demonstrate what she has seen in the discussions and explain and model the steps (see **Table 3**) that could be taken to deepen the discussion.

5.5 Guiding student use of strategies and processes

To use strategies independently, students need metacognitive knowledge about their own abilities and attitudes, what strategies are effective and available, and the particular type of activity they need to do. Carefully designed guided practice, with a gradual release of responsibility built into the instructional sequence, enables students to develop this knowledge and the confidence they need before applying them in independent practice. At this stage learners also need timely, constructive feedback to determine how effectively they are learning and applying the discussion skills. The final scenario describes how a teacher in the SOAR project monitors and guides his students as they use the processes and strategies they have been learning.

*Scenario for guiding student use of strategies and processes:* Mr. Lu has introduced metacognition, engaged his students in the reflective process, deconstructed the reflective process, and taught metacognitive processes and strategies to his class. As a result, he feels they are being more metacognitive in their discussions. He is

now monitoring and guiding his students in using those processes and strategies automatically. “You all have grown so much in working with your partners to co-construct your learning through your discussions. I see you using the metacognitive strategies we have discussed. Today, while you are having your discussion, I will be walking around listening to how you are using those strategies to regulate your discussions. I might ask you a question or set down a discussion prompt card (see **Figure 10**) as a reminder of what you could be doing to strengthen your discussion. Let us look at the cards so you are familiar with them. This one says, ‘Summarize your ideas.’ Which problem does that refer to? Yes, ‘I don’t understand.’ This one says, ‘Paraphrase your partner’s ideas.’ Yes, that matches ‘My partner doesn’t understand.’ This one says, ‘Retrace the discussion.’ Yes, that is, for ‘We need help to move forward.’”

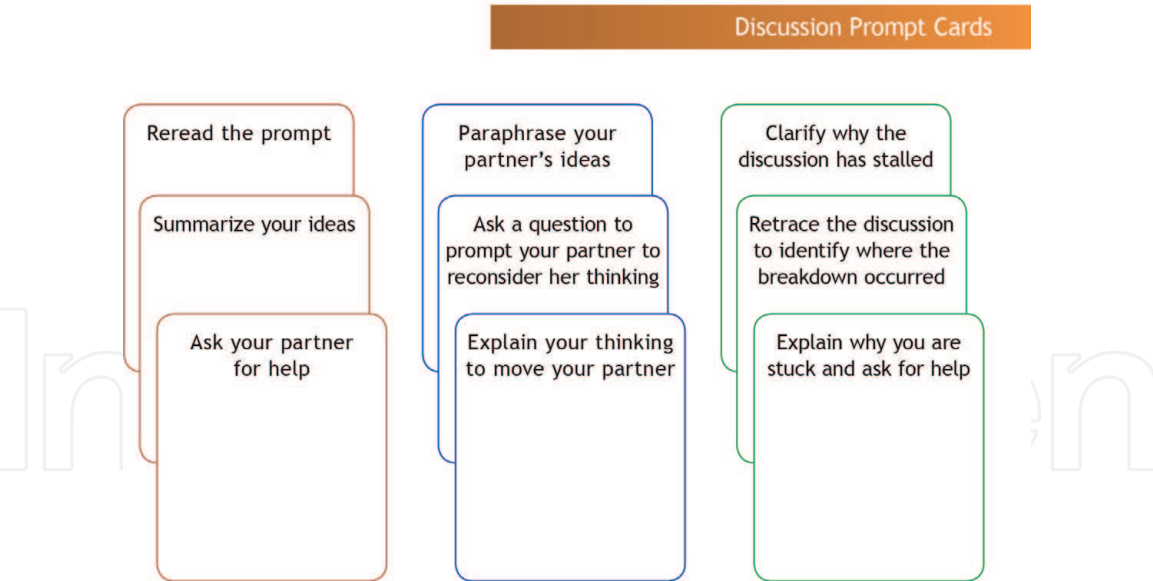
| If... or when....  | Then I can   |
|--------------------|--|
| I don't understand | Reread the prompt to refocus my thinking.<br>Summarize my ideas to clarify my thinking.<br>Ask my partner for help to get back on track. |

**Table 2.**  
*Metacognitive strategies A.*

| If... or when....                                  | Then I can   |
|--|--|
| My partner doesn't understand                      | Paraphrase my partner's ideas to help her refocus her thinking.<br>Ask a question to prompt my partner to reconsider her thinking.<br>Explain my thinking to move my partner beyond her misunderstanding.                |
| We both need help to move the conversation forward | Clarify why the discussion has stalled to figure out how to move forward.<br>Retrace the discussion to identify where the breakdown occurred.<br>Explain why we are stuck and ask for help to enable us to move forward. |

**Table 3.**  
*Metacognitive strategies B.*

Getting students to monitor and guide their own discussion can be challenging. A unique strategy to help students do this is with the use of technology. Pairs of students can video tape themselves having a discussion using an iPad, Chromebook, or phone. Ask a pair if they would allow the class to view their video as a model. Take this opportunity for students to share the strategies they saw the students in the video use appropriately as well as any suggestions for improvements. Have the rest of the class watch their own videos and provide a checklist or graphic organizer for students to record what they did well and the areas they could improve upon. Debrief as a class. Finally, have students record another discussion with the goal of incorporating those strategies they need to improve.



**Figure 10.**  
*Discussion prompt cards.*

**6. Conclusion**

Instructional practices that help students develop a reflective and strategic approach to learning, i.e., teaching for metacognition, need to be embedded across the curriculum and throughout the school day. Accomplishing this goal requires instructors to think metacognitively about their teaching and to use instructional practices strategically, i.e., teaching with metacognition. In this chapter we have explained these concepts as well as how the SOAR Teaching Frame for Disciplinary Discussions can be used to support them.

In addition, we have introduced a framework called the stages of teaching for metacognition in disciplinary discussions. This framework, as well as the research-based instructional strategies and classroom scenarios that support it, can be used to help students develop a range of metacognitive strategies for remaining actively engaged in disciplinary discussions. It also provides insight into the stages of the framework by illustrating the dynamic and interdependent ways in which they work together to drive both teacher growth and student learning.

IntechOpen

### Author details

Susan O'Hara<sup>1</sup>, Robert Pritchard<sup>2\*</sup> and Debi Pitta<sup>3</sup>

<sup>1</sup> University of California, Davis, Davis, California, USA

<sup>2</sup> Sacramento State University, Sacramento, California, USA

<sup>3</sup> Essential Practice Frames for Teaching, Roseville, California, USA

\*Address all correspondence to: [rpritchard@epfteach.com](mailto:rpritchard@epfteach.com)

### IntechOpen

© 2019 The Author(s). Licensee IntechOpen. This chapter is distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.



## References

- [1] O'Hara S, Pritchard R, Zwiers J. Academic language and literacy in every subject (ALLIES): A capacity building approach to supporting teachers in grades 4-8. In: Proctor P, Boardman A, Hiebert E, editors. *English Learners and Emergent Bilingualism in the Common Core Era*. New York, NY: Guilford Press; 2016. pp. 197-214
- [2] O'Hara S, Pritchard R. Framing teaching for common core literacy standards: SOAR teaching frames for literacy. *Psychology Research*. 2016;**6**:92-101. DOI: 10.17265/2159-5542/2016.02.004
- [3] O'Hara S, Bookmyer J, Pritchard R, Pitta D, Martin R. Driving improvements in teaching and learning through cycles of strategic observation and reflection. *Journal of Teacher Education*; in press
- [4] Pritchard R, O'Hara S, Zwiers J. Framing the teaching of academic language to English learners: A Delphi study of expert consensus. *TESOL Quarterly*. 2016;**51**:418-428. DOI: 10.1002/tesq.337
- [5] Brisk M, Proctor C. Challenges and supports for English language learners. In: Hakuta K, Santos M, editors. *Understanding Language: Language, Literacy, and Learning in the Content Areas*. Palo Alto, CA: Stanford University; 2012. pp. 115-122
- [6] Echevarria J, Richards-Tutor C, Chinn V, Ratleff P. Did they get it? The role of fidelity in teaching English learners. *Journal of Adolescent & Adult Literacy*. 2011;**54**:425-434. DOI: 10.1598/JAAL.54.6.4
- [7] Grossman P, Loeb S, Cohen J, Wyckoff J. Measure for measure: The relationship between measures of instructional practice in middle school English language arts and teachers' value-added scores. *American Journal of Education*. 2013;**11**:445-470
- [8] Gates B, Gates M. *Building Trust in Observations: A Blueprint for Improving Systems to Support Great Teaching*. Seattle, WA: Bill and Melinda Gates Foundation; 2014
- [9] Danielson C. *The Framework for Teaching Evaluation Instrument*. Princeton, NJ: The Danielson Group; 2013
- [10] Grossman P, Cohen J, Brown L. Understanding instructional quality in English language arts: Variations in the relationship between PLATO and value-added by content and context. In: Kane T, Kerr K, Pianta R, editors. *Designing Teacher Evaluation Systems: New Guidance from the Measures of Effective Teaching Project*. San Francisco: John Wiley & Sons; 2014. pp. 303-331
- [11] Baker S, Lesaux N, Jayanthi M, Dimino J, Proctor C, Morris J, et al. *Teaching Academic Content and Literacy to English Learners in Elementary and Middle School (NCEE 2014-4012)*. Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, US Department of Education; 2014. Available from: [http://ies.ed.gov/ncee/wwc/publications\\_reviews.aspx](http://ies.ed.gov/ncee/wwc/publications_reviews.aspx)
- [12] Fisher D, Frey N, Lapp D. *Text Complexity: Raising Rigor in Reading*. Newark, DE: International Reading Association; 2012
- [13] Nagy W, Townsend D. Words as tools: Learning academic vocabulary as language acquisition. *Reading Research Quarterly*. 2012;**47**:91-108. DOI: 10.1002/RRQ.011
- [14] Uccelli P, Galloway E, Barr C, Meneses A, Dobbs C. Beyond



vocabulary: Exploring cross-disciplinary academic-language proficiency and its association with reading comprehension. *Reading Research Quarterly*. 2015;**50**:337-356. DOI: 10.1002/rrq.104

[15] August D, Shanahan T. *Developing Literacy in Second-Language Learners: Report of the National Literacy Panel on Language-Minority Children and Youth*. New York, NY: Routledge; 2017

[16] August D, Branum-Martin L, Cardenas-Hagan E, Francis D, Powell J, Moore S, et al. Helping ELLs meet the common core state standards for literacy in science: The impact of an instructional intervention focused on academic language. *Journal of Research on Educational Effectiveness*. 2014;**7**:54-82

[17] Cook HG, Boals T, Lundberg T. Academic achievement for English learners: What can we reasonably expect? *Phi Delta Kappan*. 2011;**93**: 66-69. Available from: <http://intl.kappanmagazine.org>

[18] Zwiers J, O'Hara S, Pritchard R. Cutting to the common core: Changing the playing field, part 1. *Language Magazine: The Journal of Communication & Education*. 2014;**13**:24-27

[19] Marzano R, Heflebower T. *Teaching & Assessing 21st Century Skills*. Centennial, CO: Marzano Research; 2011

[20] Schoenbach R, Greenleaf C, Murphy L. *Reading for Understanding: How Reading Apprenticeship Improves Disciplinary Learning*. San Francisco, CA: Jossey-Bass; 2012

[21] Marzano R, Yanoski D, Hoegh J, Simms J. *Using Common Core Standards to Enhance Classroom Instruction and Assessment*. Centennial, CO: Marzano Research; 2013

[22] Wiggins G. Seven keys for effective feedback. *Educational Leadership*. 2012;**70**:10-16

[23] Brophy J. *Motivating Students to Learn*. 3rd ed. New York, NY: Routledge; 2010

[24] Finley T. The Science Behind Classroom Cormaning. Edutopia. 2015. Available from: <http://www.edutopia.org/blog/establishing-classroom-norms-todd-finley>

[25] Jennings P, Greenberg M. The prosocial classroom: Teacher social and emotional competence in relation to student and classroom outcomes. *Review of Educational Research*. 2008;**79**:491-525

[26] Wilson H, Sztajn P, Edington C, Myers M. Teachers' uses of a learning trajectory in student-centered instructional practices. *Journal of Teacher Education*. 2015;**66**:227-244

[27] Zwiers J, O'Hara S, Pritchard R. *Common Core Standards in Diverse Classrooms: Essential Practices for Developing Academic Language and Disciplinary Literacy*. Portland, ME: Stenhouse; 2014

[28] Chamot A. Language learning strategy instruction: Current issues and research. *Annual Review of Applied Linguistics*. 2005;**25**:112-130. DOI: 10.1017/S026719055000061

[29] Marzano R, Pickering D, Pollock E. *Classroom Instruction that Works: Research-Based Strategies for Increasing Student Achievement*. Alexandria, VA: ASCD; 2001

[30] Pressley M, Harris K. Cognitive strategy instruction: From basic research to classroom instruction. *Journal of Education*. 2017;**189**:77-94. Available from: <https://doi.org/10.1177/0022057409189001-206>