SOAR

Teaching Frames® for Literacy

MATHEMATICAL DISCUSSIONS INTEGRATION ACTIVITY

EPF Essential Practice Frames for teaching

Integrating the Practices of the Mathematical Discussions Teaching Frame

FOCUS QUESTIONS

- How can the Cross-Cutting and Foundational Practices be implemented in support of the High-Impact Practice?
- How does the integration of all of the practices in the teaching frame support student learning?
- How do the guiding questions support teachers in planning lessons that integrate the SOAR practices?

Using the SOAR Lens

SOAR is not a curriculum or an isolated set of strategies. **SOAR** is a lens you use to plan, teach, and reflect on your lessons, and ultimately elevate instruction. This represents a paradigm shift in how most think about professional development. The **SOAR** lens helps you think about how different practices are integrated during instruction to drive student learning. Therefore, it is critical to understand how each practice works in conjunction with the others.

All frames begin with a High-Impact Practice. The Cross-Cutting Practices are the same for every teaching frame, although their implementation varies in the way they support the High-Impact Practice. For example, visibly enacting metacognitive strategies to help your students engage in mathematical discussions looks different than visibly enacting metacognitive strategies to help your students develop mathematical thinking processes. The Cross-Cutting Practices, *Facilitating Acquisition of Academic Language, Fostering Metacognition for Mathematical Learning,* and *Connecting and Guiding Mathematical Learning*, represent good pedagogy. These practices need to be present in every lesson to promote student learning. Think of these as the supports for the High-Impact Practice. Without them, the lesson will be missing critical pieces that support the High-Impact Practice and student learning.

The Foundational Practice is called *Designing Instruction for Mathematical Thinking and Understanding*. It too is the same for each High-Impact Practice. This practice has teachers consider the alignment of the CCSS, the High-Impact Practice, and the learning target. It also has teachers plan how the tasks of the lesson connect and support the learning target with a laser-like focus. Finally, it emphasizes maintaining high expectations and rigor of the lesson. We want teachers to create an environment that sets high expectations and requires students to learn at high levels of rigor in meeting those expectations. As you review these three elements, you see that these elements need to be addressed in each lesson and are the foundation of the lesson, hence the name Foundational.

Guiding Questions
Mathematical Discussions: Math TK-12

FOUNDATIONAL PRACTICE

Designing Instruction for Mathematical Thinking and Understanding

1. What are the learning targets for the lesson? (Both content and language targets should be included.)
2. How do the learning targets align with the Common Core Mathematics Standards
3. How do the learning targets align with the Mathematical Discussions practice?
4. How do the tasks in the lesson support the learning targets?
5. How are the tasks in the lesson connected in support of the learning targets?
6. How will you establish high expectations?
7. Are the lesson/activities intellectually rigorous?

HIGH-IMPACT PRACTICE

Mathematical Discussions

1. How will you introduce and/or refer to mathematical conversation skills?
2. What supports will you provide to enable all students to use these skills?
3. What opportunities are you providing within the lesson for students to engage in mathematical discussions?
4. Are there extended opportunities to allow students time to create, clarify, and fortify ideas and negotiate meaning?
5. How have you structured these opportunities so students will engage in discussions with diverse partners?
6. What routines for discussion will you introduce to or reinforce with students?
7. What supports will you provide to enable all students to engage in these discussions?

CROSS-CUTTING PRACTICES

Facilitating Acquisition of Academic Language

1. What are the academic language demands of the texts and tasks?
2. How are you providing extended and supported opportunities for students to acquire and use the features of academic language?

Fostering Metacognition for Mathematical Learning

1. What metacognitive processes and/or strategies will you target?
2. How will you visibly enact these?
3. How will you explain the metacognitive processes and/or strategies to students including how, why, or when to use them?

Connecting and Guiding Mathematical Learning

1. What strategies/approaches will you use to monitor learning?
2. What strategies/approaches will you use to provide feedback to students?

Using the SOAR Lens to Enhance a Lesson

Third Grade Non-Model Lesson

Below is a non-model of a lesson created by a teacher who was unfamiliar with **SOAR**. Read the non-model. The Guiding Questions on the previous page are aligned with the **SOAR** Teaching Frame®. These Guiding Questions help you to apply the **SOAR** *Mathematical Discussions Teaching Frame* lens to planning and analyzing lessons. Use the Guiding Questions to turn this non-model into a model **SOAR** lesson. Working with your partner, identify one of the **SOAR** practices that you will focus on to enhance the lesson. Write your enhancements on the graphic organizer on page 92. Be specific about how this practice should be implemented during the lesson. When you are done, share your enhancements with your table and record the responses on your graphic organizer.

	Standards: CCSS.Math.Content.3.NF.A.1: Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b MP.3 Construct viable arguments and critique the reasoning of others MP.4 Model with mathematics MP.5 Use appropriate tools strategically MP.6 Attend to precision
	Explain partitioning - taking a whole and breaking it into equal segments. Have students partition a rectangle by folding it and cutting it into equal segments. Have students find other ways to partition the rectangle into equal segments. Give students the problem to solve: I have a super-sized candy bar and you have a regular size candy, and we want to divide each of them into fourths. Would the fourths or four pieces of each candy bar be the same or equal? Give students rectangles to use to solve the problem Walk around and monitor student work. Provide another problem: Jose made brownies in a rectangle sheet pan for himself and seven friends. How can he cut it so everyone gets the same size of brownie? Show more than one solution. Walk around and check students' understanding. Provide another problem: This rectangle is 3/4 of a whole. How can you partition it to make 1/4. Point out that this one is tricky. Hand out a 6 inch number line and a ruler. Have students partition the line into halves, fourths, sixths, and eighths.

SOAR: Revising the Non-Model Lesson

Directions: Read the non-model of the lesson. Use your knowledge of SOAR to revise the non-model so that the lesson targets the practices of the Mathematical Discussions Frame. Number off at your table to determine which practice you'll revise/enhance. Use the graphic organizer to share and record your table's revisions/enhancements.

	Practice	Elements	Additions
High-Impact Practice	1. Mathematical Discussions **(MD)**	Element 1: Build mathematical conversation skills	
		Element 2: Provide extended and supported opportunities for students to engage in mathematical discussions	
Cross-Cutting Practices	2. Facilitating Acquisition of Academic Language **(FAAL)**	Element 1: Introduce and/or refer to the academic language demands of the texts and tasks	
		Element 2: Provide extended and supported opportunities for students to acquire and use the features of academic language	
	3. Fostering Metacognition for Mathematical Learning **(FMML)**	Element 1: Visibly enact metacognitive processes and/or strategies students are expected to use in support of mathematical learning	
		Element 2: Deconstruct metacognitive processes and/or strategies that support mathematical learning	
	4. Connecting & Guiding Mathematical Learning **(CGML)**	Element 1: Elicit student thinking and adjust instruction, supports, and/or mathematical tasks to meet student needs	
		Element 2: Provide written and/or oral feedback during lessons to promote mathematical learning	
Foundational Practice	5. Designing Instruction for Mathematical Thinking & Understanding **(DI)**	Element 1: Set mathematical learning targets that are aligned with the Math CCSS and the target high-impact practice	
		Element 2: Structure and connect tasks that support the learning targets	
		Element 3: Establish high expectations that support the learning targets and maintain the intellectual rigor of classroom activities and tasks	

Third Grade SOAR Model Lesson

Compare your additions to the additions that were added to the lesson by a SOAR teacher. Label all evidence of the practices in the *Mathematical Discussions Teaching Frame*.

- MD: Mathematical Discussions
- FAAL: Facilitating Acquisition of Academic Language
- FMML: Fostering Metacognition for Mathematical Learning
- CGML: Connecting and Guiding Mathematical Learning
- DI: Designing Instruction

	CCSS.Math.Content.3.NF.A.1: Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*. MP.3 Construct viable arguments and critique the reasoning of others MP.4 Model with mathematics MP.5 Use appropriate tools strategically MP.6 Attend to precision Language Objective: Students will be able to explain and justify their partitioning and iterating using connecting words and phrases (for example, in the first place, as a result, on the other hand, etc.) and math vocabulary (fractions, equal part, whole, partitioning, and iterating) in partner and whole group discussions. CCSS.ELA-Literacy.CCRA.SL.1: Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
	Review anchor chart on importance of mathematical discussions. Explain partitioning: define it and place on word wall. Have students think about nonlinguistic representation for partitioning at end of lesson. Ask students to discuss with their partner what they know about fractions. With partners, have students break a rectangle into four equal pieces using their scissors. Walk around to monitor who does it correctly. Ask them to discuss what fraction one of the pieces of the whole rectangle is and how they know. Reinforce 1/4 is taking a whole and partitioning it into four equal parts and taking one of those parts. Do the same with 2/4, 3/4, 4/4.

	Have students work with partner and find different ways to partition a rectangle into four equal parts. Display five images of partitioned rectangles with one not being equal. Ask students to discuss if all are partitioned into four equal pieces and why. Tell students to use a sentence frame. The rectangle___ is/ is not partitioned into four equal pieces because___. Have students partition a rectangle into eight equal pieces using different ways. Give them a problem to work with their partner: "I have a super-sized candy bar and you have a regular size candy, and we want to divide each of them into fourths. Would the fourths or four pieces of each candy bar be the same or equal?" Provide sentence frames for their prediction. I think the four pieces of each candy bar will be____ because___. What do you think? I think… I agree/disagree because__. What do you think of this idea?" After their discussion, give them two different size rectangles to represent the candy bars. Work collaboratively to see if their prediction was correct. Give them another problem. "Jose made brownies in a rectangle sheet pan for himself and seven friends. How can he cut it, so everyone gets the same size of brownie? Show more than one solution." Use guided practice to model. Use sentence frame to state the answer. This is __ which is the amount we get by taking a whole and partitioning it into ___equal parts and taking one of those parts. Give them another problem. This rectangle is 3/4 of a whole. How can you partition it to make 1/4? Use the share and compare strategy. Circulate to prompt students to think about 3/4 versus and whole rectangle. Give students a 6-inch number line labeled 0-1 Have them partition it into1/2, 1/3, 1/4, 1/6, 1/12 for us to use tomorrow. Close out the lesson by having them state to their partner what we did today in math, what new thinking we did around fractions, and any confusions about today's math. Have students share out their nonlinguistic representation of partitioning. Vote on the one they think best represents partitioning and add it to the word wall.

SOAR Annotated Model Lesson

Directions: With your partner, look at the SOAR Annotated Model lesson. Choose one enhancement for each of the Cross-Cutting and Foundational Practices. Use the sentence frames to explain how each of the enhancements supports the High-Impact Practice of Mathematical Discussions.

EXAMPLE:		Defining partitioning and placing it on the word wall **is an example of the FAAL practice. It supports the High-Impact Practice of Mathematical Discussions because** it helps students understand the mathematical concept and heightens their awareness of the term in order to use it in mathematical discussions.
Cross-Cutting Practices	**FAAL** Facilitating Acquisition of Academic Language	_____**is an example of the FAAL practice. It supports the High-Impact Practice of Mathematical Discussions because** _____ _____
	FMML Fostering Metacognition for Mathematical Learning	_____**is an example of the FMML practice. It supports the High-Impact Practice of Mathematical Discussions because** _____ _____
	CGML Connecting & Guiding Mathematical Learning	_____**is an example of the CGML practice. It supports the High-Impact Practice of Mathematical Discussions because** _____ _____
Foundational Practice	**DI** Designing Instruction	_____**is an example of the DI practice. It supports the High-Impact Practice of Mathematical Discussions because** _____ _____

Third Grade Model Lesson with Annotation

Now check the annotated lesson plan below to compare what you identified to what a **SOAR** teacher identified. How do the Cross-Cutting practices enhance and support Mathematical Discussions? Use this sentence frame on page 93 as you answer this question: _____ is an example of the _____ practice. It supports the High-Impact practice of Mathematical Discussions because it_____. Process question: How did the Guiding Questions provide a lens for the frame?

DI1- Learning targets are aligned to CCSS math standards and the High-Impact Practice, MD	CCSS.Math.Content.3.NF.A.1: Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*. MP.3 Construct viable arguments and critique the reasoning of others MP.4 Model with mathematics MP.5 Use appropriate tools strategically MP.6 Attend to precision Language Objective: Students will be able to explain and justify their partitioning and iterating using connecting words and phrases (for example, in the first place, as a result, on the other hand, etc.) and math vocabulary (fractions, equal part, whole, partitioning, and iterating) in partner and whole group discussions. CCSS.ELA-Literacy.CCRA.SL.1: Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
MD1: Build Mathematical Conversation Skills FAAL1: Academic language demand MD2: Providing opportunities CGML1: Eliciting student thinking MD2: Opportunity FMML1: Reflecting on how they know FAAL1: Introduce language demands MD2: Opportunity	Review anchor chart on importance of mathematical discussions. Explain partitioning: define it and place on word wall. Have students think about nonlinguistic representation for partitioning at end of lesson. Ask students to discuss with their partner what they know about fractions. With partners, have students break a rectangle into four equal pieces using their scissors. Walk around to monitor who does it correctly. Ask them to discuss what fraction one of the pieces of the whole rectangle is and how they know. Reinforce 1/4 is taking a whole and partitioning it into four equal parts and taking one of those parts. Do the same with 2/4, 3/4, 4/4 Have students work with partner and find different ways to partition a rectangle into four equal parts.

MD2: Opportunity FAAL2: Acquire and use AL	Display five images of partitioned rectangles with one not being equal. Ask students to discuss if all are partitioned into four equal pieces and why. Tell students to use a sentence frame. The rectangle___ is/ is not partitioned into four equal pieces because___. Have students partition a rectangle into 8 equal pieces using different ways.
MD2: Opportunity FAAL2: Acquire and use AL	Give them a problem to work with their partner: "I have a super-sized candy bar and you have a regular size candy, and we want to divide each of them into fourths. Would the fourths or four pieces of each candy bar be the same or equal?" Provide sentence frames for their prediction. I think the four pieces of each candy bar will be____ because___. What do you think? I think… I agree/disagree because__. What do you think of this idea?"
MD2: Opportunity	After their discussion, give them two different size rectangles to represent the candy bars. Work collaboratively to see if their prediction was correct.
MD2: Opportunity CGML1: Guided practice elicits students thinking FMML1: Guided practice enacting FAAL2: Acquire and use AL	Give them another problem. "Jose made brownies in a rectangle sheet pan for himself and seven friends. How can he cut it, so everyone gets the same size of brownie? Show more than one solution." Use guided practice to model. Use sentence frame to state the answer. This is __ which is the amount we get by taking a whole and partitioning it into ___equal parts and taking one of those parts.
MD2: Opportunity through share and compare strategy	Give them another problem. This rectangle is 3/4 of a whole. How can you partition it to make ¼? Use the share and compare strategy.
CGML1 &2: Elicit thinking and provide feedback	Circulate to prompt students to think about 3/4 versus and whole rectangle.
CGML1: Elicit student thinking	Give students a 6-inch number line labeled 0-1 Have them partition it into1/2, 1/3, 1/4, 1/6, 1/12 for us to use tomorrow.
FMML1: Reflect on learning FAAL2: Opportunity to create nonlinguistic representation of concept	Close out the lesson by having them state to their partner what we did today in math, what new thinking we did around fractions, and any confusions about today's math. Have students share out their nonlinguistic representation of partitioning. Vote on the one they think best represent partitioning and add it to the word wall.

Step Inside the Classroom

Read the third-grade vignette. As you read it, note how Ms. Felix enacted the SOAR model lesson. How do the High-Impact, Cross-Cutting, and Foundational Practices work together and support student learning and the learning target? Use this sentence frame to answer this question. An example of (choose one: MD, FAAL, FMML, CGML, or DI) supporting the learning target and student learning is _____. It supports the learning target and student learning by _____.

Third Grade Vignette

Ms. Felix has been working with her third-grade students on a number of areas in mathematics.

1. She has been teaching her students to represent their mathematical understanding multiple ways by using pictures, manipulatives, tables, graphs, and words.
2. She has been building her students' conversation skills and providing them with extended and supported opportunities to engage in mathematical discussions.
3. She also has worked with her students on norms of interaction that include disagreeing with each other, defending their answers, working through problems collaboratively, reaching consensus, and investigating multiple strategies.

For today's lesson Ms. Felix has set the following learning targets:

CCSS.Math.Content.3.NF.A.1: Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b

MP.3 Construct viable arguments and critique the reasoning of others
MP.4 Model with mathematics
MP.5 Use appropriate tools strategically
MP.6 Attend to precision

Language Objective: Students will be able to explain and justify their partitioning and iterating using connecting words and phrases (for example, in the first place, as a result, on the other hand, etc.) and math vocabulary (fractions, equal part, whole, partitioning, and iterating) in partner and whole group discussions.

CCSS.ELA-Literacy.CCRA.SL.1: Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

Ms. Felix begins the lesson by explaining to students that the next unit they are studying in math is fractions. "Before we begin, let's review our Discussions in Math anchor chart we made together on the importance of having discussions in math because we will be discussing a lot today.

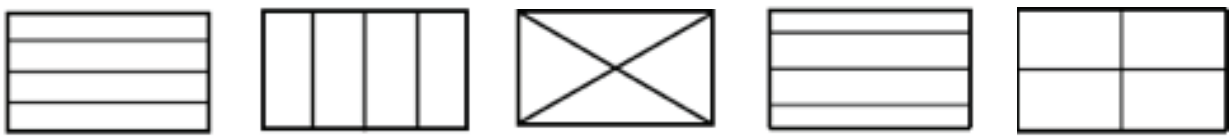
1. Discussing our thinking helps us understand math better.
2. Listening to others explain their thinking helps us learn.
3. Discussing math helps us clarify our own thinking.
4. Working collaboratively helps us solve challenging problems."

"We are going to be looking at two ways we can reason and talk about fractions, partitioning and iterating. We are going to work with partitioning first. Say that word with me…Partitioning is when we take a whole and break it into equal segments. We can break it two times, four times, ten times, as many times as you need to. However, the segments must be equal. Let's write that on our word wall chart with the definition. We'll add our mathematical nonlinguistic representation at the end of our lesson today as another reminder of what the word means."

"Take a minute and think about what you learned last year about fractions. With your partner, first discuss what you remember about fractions. When you are done discussing what you know, discuss how you can break one of the rectangle pieces of paper on your desk into four equal segments using your scissors." Ms. Felix walks around to check for understanding and misunderstandings to guide her next move. She notes that most of the students are folding their rectangle into four equal pieces before they cut, while a few are just cutting the rectangle into four pieces.

She then asks the students to line up their four pieces below each other to see if they are equal. She walks around to those students who didn't make four equal pieces and takes this opportunity to ask them if they have four equal pieces and follows up with what can you do to make sure they are equal pieces.

Ms. Felix asks her students to discuss with their neighbor what fraction one of the pieces of the whole rectangle is and how do they know. Students responds 1/4. She then provides the students with a model saying this is 1/4 which is the amount we get by taking a whole and partitioning it into four equal parts and taking one of those parts (she physically does this)." She then holds up two fourths and has students repeat with her, this is 2/4. It is 2 one-fourths, 3/4 is 3 one-fourths and 4/4 is 4 one-fourths. She asks the students to work with their partners to figure out as many ways as possible to partition the rectangle into four equal parts. She has students share out the different models of rectangles cut into fourths. She then displays five models and asks the students to discuss if each of these rectangles are partitioned into four equal pieces and why using the sentence frames on the wall.



She then has the students take another rectangle and partition it into eight equal pieces. She circulates and is pleased all of the students figured out how to fold their rectangle into eight equal pieces before making the cuts. She has some students share out the different ways they figured out how to get eight equal pieces from the rectangle.

She then provides a problem. *"I have a super-sized candy bar and you have a regular size candy, and we want to divide each of them into fourths. Would the fourths or four pieces of each candy bar be the same or equal?* I want you to discuss this with your partner first. I want each of you to make a prediction and explain your thinking, so you are creating and clarifying your ideas. Use these sentence frames.

I think the four pieces of each candy bar will be____ because___.
What do you think?
I think…
I agree/disagree because__.
What do you think of this idea?"

Ms. Felix walks around listening to the ideas and how they are explaining their ideas to each other. Some students think they will be the same and some think they will be different sizes. She brings the class back together and asks them how they think they can prove their prediction is correct. Students suggest using two different size rectangles and dividing them in fourths. She distributes two different color and size rectangles to the students. She reminds students that they are to work collaboratively and discuss the steps they take to prove their predictions.

Ms. Felix circulates around the room listening to students discuss their steps to prove their predictions. She stops at one set of students. They each begin to cut their rectangle into fourths without discussing the steps. She stops them and points to the Discussion in Math anchor chart to remind them of the importance of collaborating with their partner. One student then explains how and why she is folding the rectangle into fourths before she cuts it. Another student adds on by saying that by folding it first, we should get four equal segments.

Ms. Felix displays another problem on the whiteboard, "Let's try another problem."

Jose made brownies in a rectangle sheet pan for himself and seven friends. How can he cut it, so everyone gets the same size of brownie? Show more than one solution.

"Let's work together on how we could approach this problem. Remember, first we need to ask ourselves what is the problem asking me to do. Turn to your neighbor and discuss what you think and put it in your own words starting with our stem, 'The problem is asking me to….' Jessica, tell me what you and your partner said."
Jessica: "The problem is asking me to figure out how to divide the brownies into eight equal pieces."
Ms. Felix: "How did you get the number eight?"
Jessica: "There is Jose and seven friends so that makes eight."
Ms. Felix: "Good reading. How many of you figured it was eight?...There is one more thing the problem is asking us to do. Victor, can you tell us?...Yes, try to find more than one solution. Why do we want to find more than one solution? Maria?"
Maria: "Because finding multiple solutions deepens our understanding." "Yes, looking at a problem in different ways does that,"

Ms. Felix then states, "My first step is to draw a rectangle to represent the sheet pan of brownies. I need to cut it into eight equal pieces. Draw a rectangle and talk with your neighbor to figure out one way to partition it. Now, can you figure out another way? I'll give you a hint. Remember how earlier we saw different ways to partition something into four equal pieces."

Ms. Felix has a few students share out their solution. She asks them to state what one piece would be using the sentence frame modeled earlier. This is __ which is the amount we get by taking a whole and partitioning it into ___equal parts and taking one of those parts.

She hands out one more rectangle. This time she tells them, *"This rectangle is 3/4 of a whole*.

How can you partition it to make 1/4. We are going to use our *Share and Compare* strategy that we have used before. First, you are going to work individually to solve the problem. You are going to document your thinking on the graphic organizer. Then when you and your partner are ready, explain and justify your mathematical thinking using our prompt and response starters.

	Prompt Starters	Response Starters
Explain & Justify	• How did you approach the problem? • What did you do first? • Why did you…? • Can you explain how… • In your solution you…Why? • What does … represent? • Tell me more about…	• First, I… • Next, I… • Then, I… • I used … to show… • The reason I … is because… • The … represents… • I would like to add…
Compare	• How are our solutions alike and different? • How would you describe each solution? • How is my thinking similar to yours? • How is my thinking different from yours? • What is one connection you can make?	• Our solutions are alike because… • Our solutions are different because… • In my solution… • In your solution… • Our thinking is similar because… • Our thinking is different because… • One connection is…

SHARE & COMPARE

Name: _____ Partner's Name: _____ Date: _____

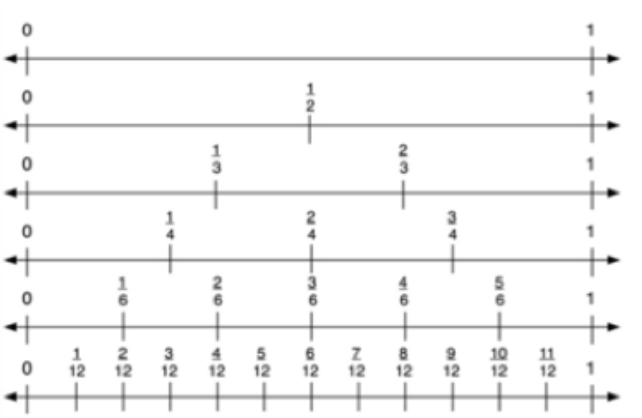
☐MP1 – I made sense of the problem and did my best to solve it.	☐ I asked clarifying questions about my partner's idea.
☐MP3 – I explained and justified my thinking using models, numbers, and words.	☐ I answered questions and gave examples to justify my solution.

Problem	
My Solution Pathway	**My Partner's Solution Pathway**
Compare both solution pathways: How is my thinking similar to and/or different from my partner's thinking?	

I am going to be walking around listening to each of you explaining and justifying your strategy and thinking. Then once you have both shared, I want to hear you each comparing your strategy. Remember, here are the prompt and response starters you can use."

Ms. Felix walks around the room with a clipboard and checklist. She is listening to see how her students are explaining and justifying their strategy as well as asking for clarification. She is impressed at how well her students worked together to understand that the candy bar was not a whole but 3/4 of a whole.

Ms. Felix tells the students how well they are doing and says, "We are going to do one more thing today with fractions. We are going to look at a number line and partition it." She distributes a number line six inches long and a ruler. She explains to students that they are going to partition the number line into two, three, four, six and twelve equal pieces. She asks them to think and discuss with their partner how the ruler can be a tool to help them. Students beginning problem solving with their neighbor. When students finish, she explains that they will be using the number line tomorrow as they continue to explore fractions.



Ms. Felix has a class discussion regarding today's math. "I want you to think about what we did today. Can someone explain to me what we did today?...Does anyone want to add on?...What new thinking did you have today regarding fractions?...What has you confused? … We need to create our nonlinguistic representation of partitioning. Does someone have an idea of how we can represent it on our word wall?... Who else has an idea?... Does anyone else have an idea? Let's vote to see which nonlinguistic representation should go on our word wall."

Conclusion

The purpose of this chapter has been to deepen your understanding of how the instructional practices that comprise the *Mathematical Discussions Teaching Frame* work together in an integrated manner to support both teacher and student growth. The lens that this teaching frame – and every **SOAR** Teaching Frame® – provides enables you to plan, teach, reflect on, and ultimately elevate instruction. The frames, and associated tools like the guiding questions, also provide you with a lens to use when offering constructive feedback to peers on their lessons. When you use the common language of the **SOAR** Teaching Frames® to engage in cycles of strategic observation and reflection, you collectively improve learning outcomes for all students.

The SOAR Teaching Frames® are based on a decade of research and help teachers, coaches, and administrators drive student learning by focusing on the most effective teaching practices aligned with the College and Career Readiness Standards. This manual is to be used in conjunction with a two-day Deep Dive designed to deepen understanding of the Mathematical Discussions Teaching Frame.

"The SOAR teaching frames provide my teachers with support for planning rigorous and socioculturally relevant instruction for our diverse population of students. Problem solving and mathematical discourse have been a focus at our school and the SOAR Teaching Frames for Mathematics in particular are helping my teachers attend to the linguistic demands of the Common Core Standards for Mathematical Practice. More specifically, when considering the learning needs of English Learners, the frames help my teachers focus on teaching students the language required to comprehend and communicate their mathematical thinking effectively."

Michelle R. Staine, Assistant Principal
Esperanza Elementary School
Los Angeles Unified School District, Los Angeles, CA

"At the Center for Teacher Innovation we have used The Strategic Observation and Reflection (SOAR) Teaching Frames in training our reflective coaches to support teachers in implementing the California Content Standards. Our coaches are learning how to use the SOAR tools to identify and support a set of dynamic instructional moves effective teachers use to support student learning in Common Core classrooms that span grade levels and content areas. This suite of tools can be used to gather evidence and provide actionable feedback that will drive both teacher and student growth. The Frames are aligned to the California Standards for the Teaching Profession and have given our coaches an understanding of high-impact instructional practices and the capacity to coach beginning teachers in cultivating these practices."

Barbara Howard, Executive Director
Center for Teacher Innovation
Riverside County Office of Education, Riverside, CA

"SOAR is the convergence of long-term projects developed and implemented in California that position learning and professional growth at the center of teacher effectiveness and evaluation. The program provides a process for teachers and administrators to establish shared goals and objectives, instructional trust, and tools to calibrate their collective expectations of effective teaching. SOAR would be a significant help to any district looking for a professional growth model focused on improving the instructional and leadership practices of each educator."

Marcia G. Trott, Improving Teacher Quality State Grants Administrator
California Department of Education, Sacramento, CA

"The SOAR frames have been the foundation for our current work in the district to transform our instructional practice. Not only do the frames provide us with common language and specific definitions of effective teaching practices, but they have also served as a detailed model for teachers, principals, and coaches. The frames have given our teachers specific strategies to implement and refine, which more actively engage students in their learning."

Ruben Reyes, Superintendent
Robla School District, Sacramento, CA