

Module 3

Focus on Implementation – Norms and Routines to Prompt and Support Argumentation



“A culture of thinking produces the feelings, energy, and even joy that can propel learning forward and motivate us to do what at times can be hard and challenging mental work.”

~Ron Ritchhart

Opening Activity

Opening Activity: Animal Populations Task

Original problem from illustrativemathematics.org

Suppose P and Q give the sizes of two different animal populations, where $Q > P$. In (a) – (d), say which of the expressions is larger. Briefly explain your reasoning in terms of the two populations.

(a) $P + Q$ and $2P$

(b) $(Q - P)/2$ and $Q - P/2$

(c) $\frac{P}{P+Q}$ and $\frac{P+Q}{2}$

(d) $P + 50t$ and $Q + 50t$

Private Think Time

Structured Pairs-Share

Module Objectives

- Develop a deeper understanding of argumentation and its potential in the math classroom.
- Examine norms and routines that can support mathematical argumentation in the classroom
- Develop an understanding of a pedagogy of inquiry to support mathematical argumentation in the classroom

Brainstorm

What classroom norms support a culture of thinking and mathematical argumentation?

Why watch videos?

- Allows us to dig deeply into a moment
- “Slows down” classroom life, and lets us consider it from multiple view points, multiple times
- Productive for helping us think about students’ interactions and how teacher’s work influences student’s participation and thinking
- Note: not as good for questions about patterns, such as who typically participates



Video Set Up

- Six students are from a Grade 6 class from 2014-2015.
- Working with Michelle McKnight, an interventionist in addition to their regular math class, one day per week.
- Ms. McKnight worked with them in their class to provide support 3 days a week.
- One of Ms. McKnight's goals was to support math discourse and CCSS-M Mathematical Practice 3.

Tips

- **Focus on the argumentation**
 - What is the role of argumentation in this classroom?
 - What purpose does it serve in this lesson?
- **Focus on the student thinking**
 - How are they making sense of the mathematics?

Guiding Questions for Video

1. What moves do you see the teacher making to help promote a culture of thinking?
2. What do you see students saying or doing that relates to a culture of thinking?
3. What norms may have been previously established in this class to support this interaction? What evidence does the video provide?

Classroom Norms for Argumentation



<https://youtu.be/l1nzLeGpdDc>

Debrief of Video

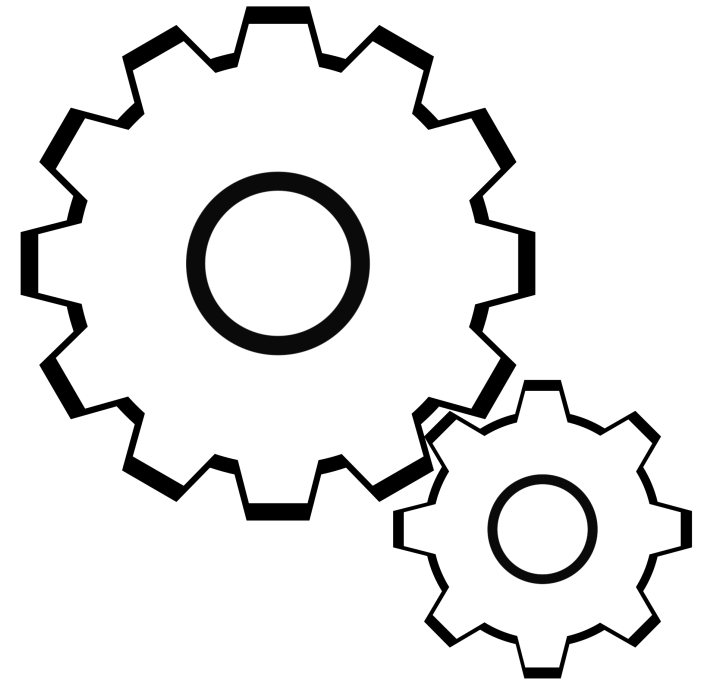
1. What moves do you see the teacher making to help promote a culture of thinking?
2. What do you see students saying or doing that relates a culture of thinking?
3. What norms may have been previously established in this class to support this interaction? What evidence does the video provide?
4. What questions would you want to ask the teacher of this class?

Norms to Support A Culture of Thinking – Summary thoughts

Shifting Gears to Pedagogical Routines

Definition

Routine – a sequence of actions regularly followed



Brainstorm: Pedagogical Routines

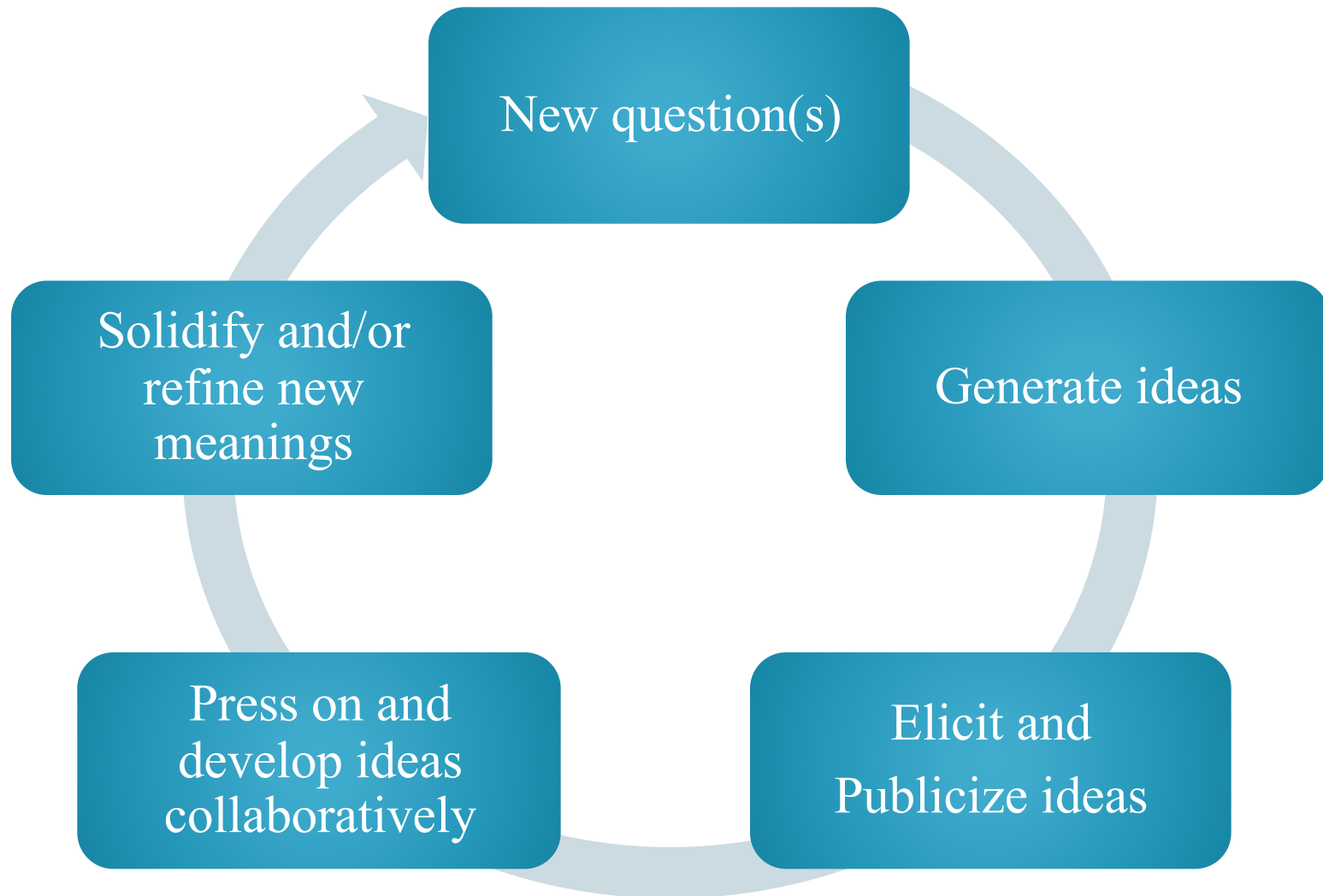
What routines do you know that help support argumentation and a culture of thinking?

Brainstorm: Pedagogical Routines

- Ideas

- Ideas

A Pedagogical Model to Support a Culture of Thinking



Problem Solving Tasks: *Why do tasks together?*

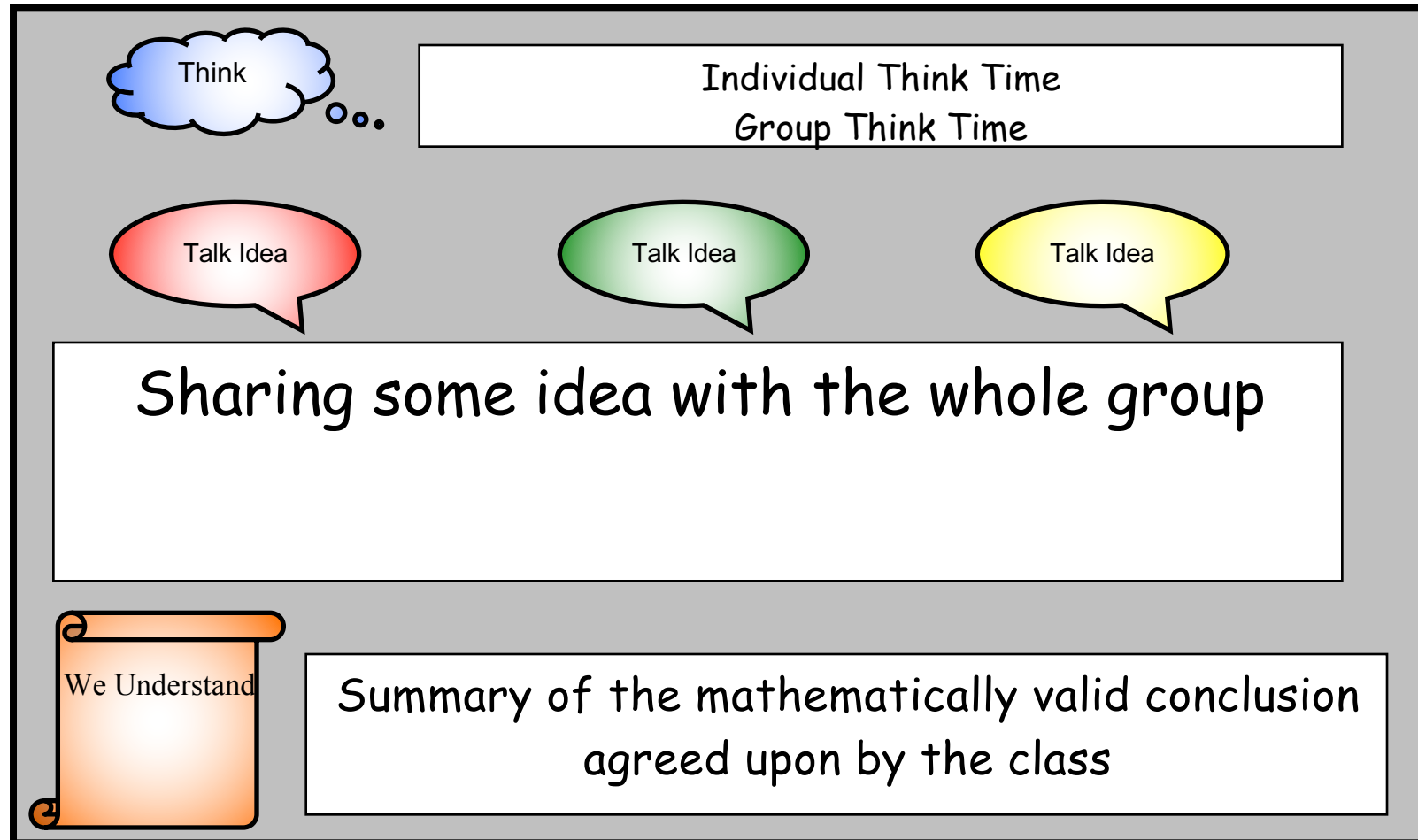
- Provide a common math-teaching-and-learning experience for reflection and discussion
- Opportunity to discuss tasks and task implementation
- Exposure to/discussion of some teaching strategies
- Opportunities to see how others think
- To learn more math (connections); engage in *productive struggle*
- For fun! 😊

Let's Begin...

**A pedagogical routine to
support a culture of
thinking:**

Talk Frame Routine

Talk Frame Routine



Exploring Shape Games: Geometry with Imi and Zani, by M. K. Gavin, T. M. Casa, S. H. Chapin, and L. J. Sheffield. Copyright © 2012, by Kendall Hunt Publishing Company

Remember our Community Agreements

Think

UCON



Chain of Flowers Pattern task

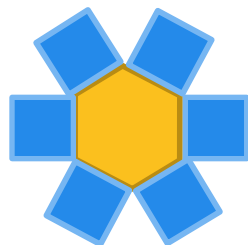


Figure 1

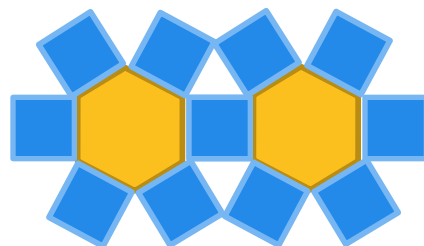


Figure 2

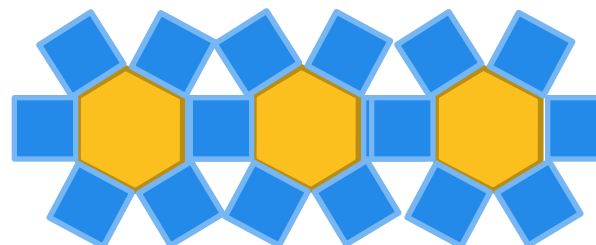
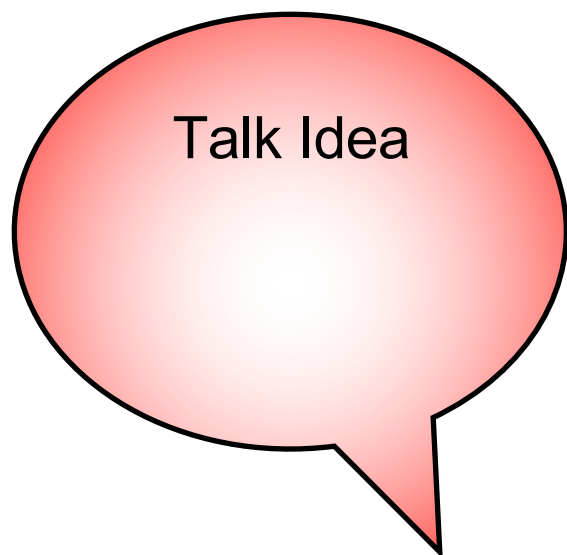


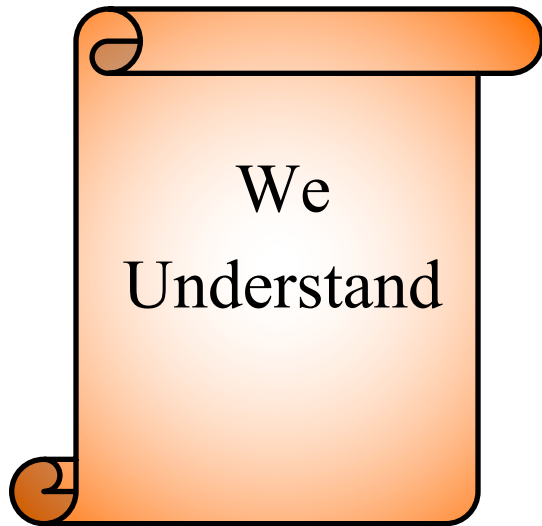
Figure 3

- Draw Figure 5. How many tiles does it have?
- How many tiles will the 25th figure have? How do you know?
- How many tiles are in the n th figure? How do you know?

Sharing Ideas with Whole Group



The Take-Aways



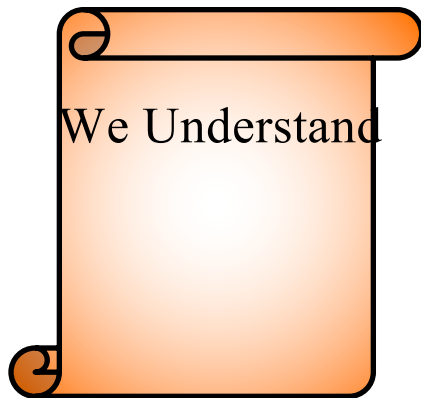
Reflecting on the Talk Frame Routine



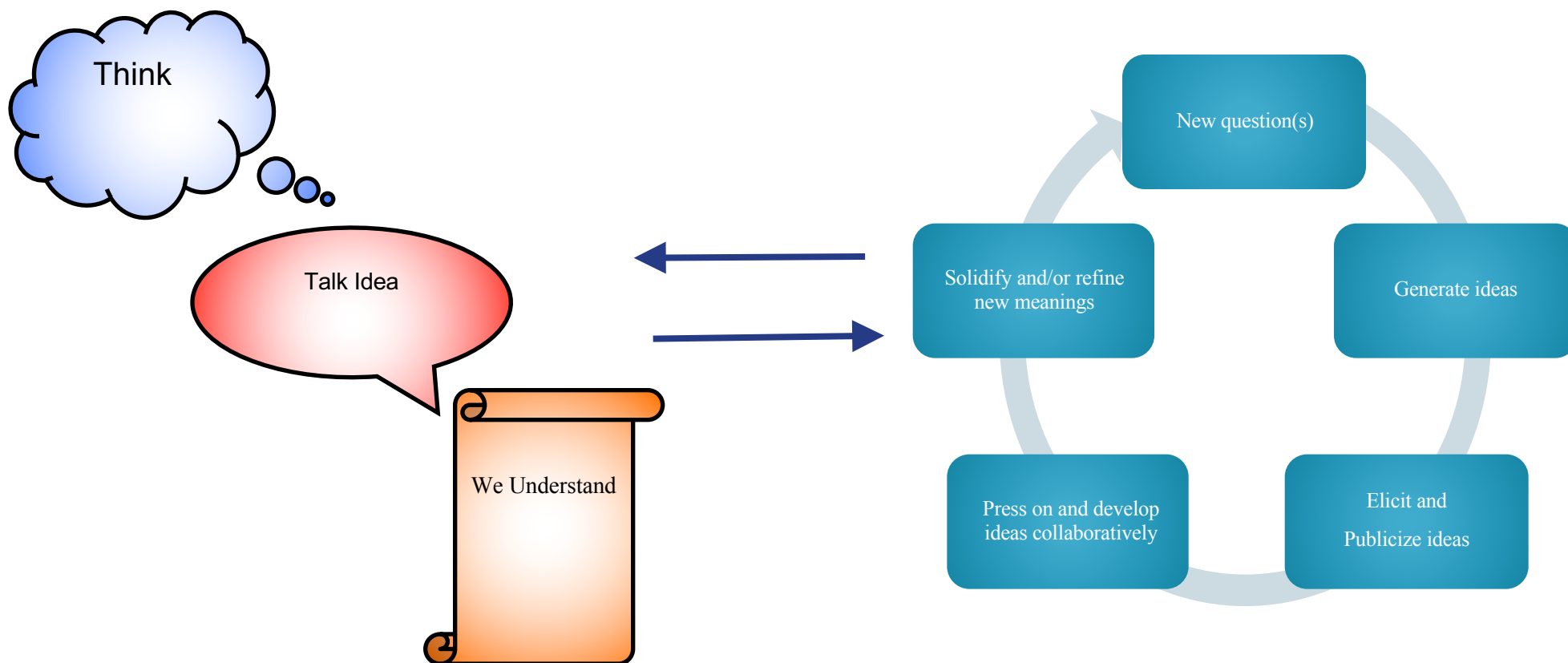
Thoughts, comments, questions



- Consider: What might the Talk Frame, or a similar routine, help you do?
- What questions do you have?



How does the *Talk Frame Routine* support the *Pedagogical Model for a Culture of Thinking*?



Talk Frame Routine

Think

Question worded using student accessible phrasing

Talk Idea

Notes representing students' ideas

(These include correct ideas as well as misconceptions. Also, the number of "talk idea" sections used will vary according to the lesson, student contributions, and teacher's decisions about how to group ideas. The teacher can also choose to add in a particular "talk idea.")

We Understand

Summary of the mathematically valid conclusion agreed upon by the class

Exploring Shape Games: Geometry with Imi and Zani, by M. K. Gavin, T. M. Casa, S. H. Chapin, and L. J. Sheffield. Copyright © 2012, by Kendall Hunt Publishing Company

Talk Fame Routine Template



Large empty rectangular box for thinking.



Empty rectangular box for the first talk.



Empty rectangular box for the second talk.



Empty rectangular box for the third talk.



Three horizontal lines for writing the "We Understand" section.

Bridging to Practice

Bridging to Practice: Talk Frame Routine Mini Lesson

1. With your team, select one of these problems
2. Individually work the problem
3. With your team, talk about the problem
 - What's worth discussing in a mini-lesson related to this problem?
 - What would make a good "talk frame" question?
4. Use the Talk Frame Routine template to help you prepare a mini-lesson
5. Talk with your team about how you will teach this mini-lesson (who will do what, etc.)
6. Teach the mini-lesson to your assigned team

Remember the Talk Frame Routine

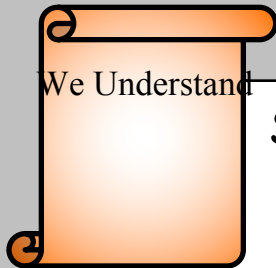


Question worded using student accessible phrasing



Notes representing students' ideas

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Closure

Reflecting on Norms in your own Practice

1. Which norms/routines do you see yourself using at the beginning of the school year? Why?
2. All students can and should have opportunities to participate in argumentation. How might that work differ from class to class, or across groups of students with different needs?
3. What have you tried already that has worked well in your classroom?

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