

Study Guide

ROUGH DRAFT MATH



REVISING TO LEARN

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Chapter I

Rough Draft Thinking in Mathematics Classrooms

Reflection Questions:

How can we teach so that students talk to learn rather than talk to perform? What steps can we take?

What would it take for us to hear the strengths in students' rough draft ideas? How can we then leverage students' rough draft thinking to position more students as mathematically competent?

What can we do to encourage and support ourselves and our students to listen to understand each other (interpretive listening) or to listen to learn with our students (hermeneutic listening)? What can we do to decrease our desire to listen from an evaluative stance? Why do these listening stances matter for teachers? For students? (See Table 1.1.)

Action step:

Investigate the degree to which students experience your classroom as a learning culture or a performance culture. Ask your students about their experience. A question I have used is:

During mathematics class discussions, I . . . [choose one]:

- am willing to share my ideas out loud to the class whether or not I am sure I am correct.
- will not share my ideas out loud to the class unless I am sure I am correct.
- do not want to share my ideas out loud to the class at all.

Chapter 2

Building a Culture of Rough Draft Thinking

Reflection Questions:

What dilemmas are you facing regarding fostering classroom discourse? What are your conjectures about why these issues are taking place? What possible solutions have you considered?

What supports do you already provide to your students to help them feel safe to share their ideas while they are still in progress or before they're sure whether they're correct?

What new ways do you want to support your students and encourage them to engage in rough draft thinking, after reading chapter two? Why might this be helpful?

Action Steps:

Develop a set of Rights of the Learner for your classroom, collaboratively, with your students. (See examples starting on page 45.)

Talk with students about why rough drafts are helpful for learning mathematics. (See example from Christine Hubbard on page 39.)

Enact a round of rough draft sharing. (See example from Brandy Cooper starting on page 25.)

Chapter 3

Tasks That Provide Opportunities to Communicate to Learn

Reflection Questions:

The list of features of tasks that could invite rough draft thinking was not written as a complete list. What other task features could help promote rough draft thinking? (See list on page 60.)

Do you currently use any instructional routines that invite rough draft thinking? Are there any instructional routines that you have wanted to try that you think could invite rough draft thinking? In what ways do these routines support students' engagement in drafting initial ideas and then revising them? (See the example of Contemplate-then-Calculate starting on page 68.)

Have you ever changed a task to open up discourse? What modifications did you make to the task? Were your modifications similar to or different from the list of task modifications on page 76? (Again, this list wasn't meant to be exhaustive.)

Action Steps:

Examine your curriculum materials and find two mathematics tasks: One task that seems likely to encourage students to share their draft thinking and revise it, and another task that does not seem to be useful for rough draft thinking. How are the tasks similar and how are they different?

Find a task that seems to be in-between—it has the potential to engage students in rough draft thinking. How would you plan to modify it and enact it? Would you elicit multiple strategies so students could compare and contrast them before revisiting and revising their own strategy? Are there scaffolds that you could cut from the task? Would you try implementing the mathematical Bet Lines launch? What other ideas do you have for modifying or enacting the task? How are these modifications and ideas for enactment supportive of rough draft thinking, and, ultimately, students' learning?

Choose a task aligned with your goals for an upcoming lesson that has the potential to engage students in rough draft thinking. After thinking about your goals for students' learning, brainstorm some first draft responses that students might have for this task. Then anticipate what a powerful revised draft would look like for these responses.

Chapter 4

Refining Understanding Through Revising in Math Class

Reflection Questions:

In what ways have you seen teachers incorporate revision into mathematics lessons or units?

Are there any revision structures described in this chapter that you would like to implement? Which one would you like to prioritize to try in your classroom? Do you have any modifications that you would like to make to one of these revision structures?

Consider the list of possible goals for revising our mathematical work. (See Table 4.4.) Are some of these goals already part of your teaching practice? If so, which ones? Why? Are there additional goals for revision that you would like to consider when planning and enacting a future lesson? Which one(s) and why?

What are your thoughts about giving students opportunities to revise mathematics assessments? How could revising assessments be implemented successfully?

Action steps:

Try one of the revision structures listed in Table 4.1 (or modify one in order to try it). Collect student work to think about how students' thinking evolved and shifted.

Generate a set of Talking Points (see page 106) for a current or upcoming unit by writing statements of ideas that are true, false, and partially true about the mathematics in those lessons. Engage your students in thinking about these talking points.

Chapter 5

Rough Draft Thinking as a Rehumanizing Endeavor

Reflection Questions:

Have you heard the term “humanizing the mathematics classroom” before? If so, what did you think it meant? Was your definition similar to or different from the one that I landed upon? In what ways? Do you have a revision to offer for my last version of the definition?

What strategies have you tried to create a rehumanized mathematics classroom? In what ways did these strategies help you achieve this goal (or not)? Did this chapter inspire you to consider additional practices to try? If so, which ones?

Action steps:

Enact one of the practices from this chapter:

- eliminate cold calling
- provide a way for students to share their thinking anonymously
- allow students to revise an assessment
- allow students to decide the format for sharing their knowledge of what they have learned during a unit
- invite students to explicitly reflect upon whether and how they are enacting classroom norms

What data can you collect from students to support your reflection on your efforts?

Chapter 6

Putting "It" into Practice . . . or We are All Works in Progress

Reflection Questions:

What can we do to create a “spirit of rough drafting” on a daily basis?

How often and in what ways do you want to ask students to revise their thinking?

How can we treat our own efforts to improve our teaching as a rough draft or a work-in-progress?

Action Steps:

Be vulnerable with a trusted colleague and share how you’re trying to grow and improve, what you have tried, and how you would like to move forward.

Check in with your students by asking them a reflection question about your improvement goal. Before you decide that things are not going well, perhaps students can provide some balanced insights.