Additional Materials

- Reproducible 1.1a, 1 copy per participant
- Reproducible 1.1b, 1 copy per participant
- Reproducible 1.1c, 1 copy per participant
- Paper and markers or a means of displaying written work for all participants to see

Directions

Part 1: Discussing the benefits of classroom talk

1. Provide an overview for the session. Explain that in today's session participants will focus on getting a general overview of the benefits and challenges of classroom talk, and on getting an initial sense of what academically productive talk looks like and sounds like. Participants will view up to five short video clips, approximately two to three minutes each, of classrooms where teachers are using the tools that participants will encounter.
2. Provide a copy of Reproducible 1.1a to each participant. This reproducible is a photocopiable version of the "Why Use Talk in Mathematics Classrooms?" material at the beginning of this guide, along with discussion questions.

3. Ask each participant to pair up with one or two other people and spend two minutes discussing each of the five reasons for using talk, thinking of examples from their own teaching that align with the content on the reproducible.
4. Have each pair or trio report out their results and write these where everyone can see them (for example, on chart paper). Displaying the results allows participants to process the claims on the reproducible and to reflect on their own students as learners. You want to help them become aware of the obstacles to learning in their classrooms and how productive student talk might address some of these.

Session 1.1 Discussion Questions

- Think about your own students and their learning strengths and difficulties. Which of the five reasons for using classroom talk and discussion seem most relevant to your current teaching?
- Is there an example from your experience that might support one of the five claims?

Part 2: Viewing the DVD

Session 1.1
Video Clips Overview
A First Encounter with Productive Math Discourse

1.1a: How many students are wearing shoelaces? (Kindergarten)
In this clip, Mrs. Luizzi's students have made a chart showing how many students are wearing shoelaces and how many are not. The Yes column has nine students in it and the No column has five. Students discuss which is more, nine or five.

1.1b: How did she solve it? (Grade 1)
In this clip, the teacher, Ms. Moylan, has students solve addition of three numbers and explain it to their partner. The partner then repeats back what the first student said. Here the problem is $3 + 4 + 2$.

1.1c: How could it be nine? (Grade 3)
In this clip, Mrs. Schineller's class is using mathematical expressions like almost all *and* more than half *in the context of discussing a bar graph. The graph shows that twenty-nine students do their homework before dinner and nine do homework after dinner.*

1.1d: Is forty a factor of forty? (Grade 4)
In this clip, the teacher, Mrs. Burgess, is presenting mystery number puzzles with clues involving factors and multiples. For the problem shown on the video, students are divided as to whether forty is a factor of forty.

1.1e: Is three-fifths less than three-fourths? (Grade 6)
In this clip, Mrs. Rowan's students talk about how they know that three-fifths is less than three fourths.

5. Let participants know that they will now be viewing video clips. Go over the guidelines for watching videos of teaching.

Guidelines for Watching Videos of Teaching

Before viewing any of the video clips, it is important to discuss with participants some of the norms for watching teaching videos. The educators who agreed to be recorded have complex and challenging classrooms, just like many of the participants.

Sometimes video-viewing sessions can be dominated by critical remarks that are ultimately not helpful, such as "Why didn't she do [something else] instead?" Discuss with participants a few simple principles for watching videos of teaching that will ensure that your professional development session is as productive as possible. Feel free to add your own guidelines to the following list, or to ask participants in your group to add their own. This is particularly important if your participants will be following up the professional development sessions with videos of their own classrooms.

Four Rules for Successful Video Viewing

1. Assume that there are many things you don't know about the students, the classroom, and the shared history of the teacher and students on the video.
2. Assume good intent and expertise on the part of the teacher. If you cannot understand his or her actions, try to hypothesize what might have motivated him or her.
3. Keep focused on your observations about what students are getting out of the talk and interaction.
4. Keep focused on how the classroom discourse is serving the mathematical goals of the lesson.

6. Depending on the interests and grade levels of your participants, you may decide to focus on a subset of the five video clips, or you may decide to watch all five. For each video you decide to show, provide a brief overview including the demographics of the school (refer to the demographics table on page xxxvi).
7. Let participants know they will be viewing the video clip(s) twice. First they will watch the clip, then they will be given specific questions to guide their second viewing.

8. Play the first selected clip. Allow participants to watch it in its entirety.
9. Provide a copy of Reproducible 1.1b to each participant. This reproducible contains more discussion questions for this session. Ask participants to talk with the person next to them about the descriptive question, What did you see happening here? Encourage them to focus on *low-inference* descriptive observations, not critiques or analyses of the teaching. After a few minutes, ask participants to hold a large-group discussion about what they observed. You might then ask the participants, "Did anything surprise you, interest you, or make an impression on you?"

Video Clips 1.1a–1.1e
Discussion Questions (First Viewing)

- What did you see happening here?
- Did anything surprise you, interest you, or make an impression on you?

10. Tell participants that they will be watching the selected clip again, this time with specific questions to consider. Read the corresponding discussion questions, clarify if necessary, and ask participants to keep these questions in mind as they watch the clip a second time. (For clips that have more than one question, you may choose to use only one. If you have more time, you can bring up the other questions or expand on the first.)

Video Clips 1.1a–1.1e
Discussion Questions (Second Viewing)

1.1a: How many students are wearing shoelaces? (Kindergarten)
How do the interactions you see provide opportunities for formative assessment? For language development? What do you notice about the questions the teacher is using?

1.1b: How did she solve it? (Grade 1)
What might the teacher, Ms. Moylan, learn from the repetitions she is asking for? What's the difference between what Imogene said she did and Maxwell's version of what she did? What's the value of clarifying in this case?

1.1c: How could it be nine? (Grade 3)
How is this teacher, Mrs. Schineller, using talk to clarify symbolic and graphic representations? What techniques can you see Mrs. Schineller using to work on mathematical language?

1.1d: Is forty a factor of forty? (Grade 4)
When Kirsten repeats what Tsion says, she adds an interesting point. What is that point?

1.1e: Is three-fifths less than three-fourths? (Grade 6)
What is the idea that everyone is trying to repeat? What can you tell about student understandings from watching the students try to repeat it?

11. View the selected clip for the second time.
12. After you finish viewing the clip, ask participants to talk with the person next to them about the corresponding discussion questions. After three minutes or so, hold a large-group discussion about what they observed.
13. Repeat steps 6 through 12 for each video clip you have selected to view.

Part 3: Introducing four steps toward productive talk

14. In Part 2 participants viewed short video examples of academically productive talk in mathematics classrooms. Explain to participants that the rest of the professional development sessions in this resource are designed to support their efforts in bringing productive discourse to their classrooms. Encourage participants to think about the goal they are trying to reach—productive and sustained discussion of mathematical ideas. Share that the authors of *Classroom Discussions* have organized the talk moves within a four-step framework that aims to clarify how, when, and why we use the talk moves. This third part of Session 1.1 introduces participants to that framework; participants will work together to understand the four steps necessary to reach their goal.

Encourage participants to think about the goal they are trying to reach—productive and sustained discussion of mathematical ideas.

15. Ask participants to talk in pairs about successful academic discussions they have seen in their own classes or elsewhere. What were the characteristics of those discussions? Most importantly, what did the students *do*?
16. After a few minutes, facilitate a large-group discussion in which participants share their thoughts. Record their answers. It is likely that someone will mention *listening to others.* It is likely that someone will mention that students in the successful discussion *responded to one another's ideas.* Someone may mention that the discussion was focused on important content or on *student reasoning.*
17. After you have discussed these desired characteristics of student discussion, ask participants to spend a few minutes discussing the *obstacles* to orchestrating such a discussion. Facilitate a large-group discussion in which participants share their thoughts. Record their answers. See the "Talk About It" section for support in discussing participants' thoughts.

TALK About It

Discussing the Obstacles to Orchestrating Classroom Discussions

It is likely that participants will mention shortage of time and not knowing what to talk about. These DVDs and guide, along with the book, *Classroom Discussions: Using Math Talk to Help Students Learn, Grades K–6, Second Edition* (Chapin, O'Connor, and Anderson 2009),

will help with those two issues. At this point you might reassure participants that by the end of the professional development sessions in this guide, they will have acquired the skills to manage the time and make sure the content is productive.

Other worries may focus more on interaction. They might include a fear that students will be too shy to talk, or that their language backgrounds will not allow them to contribute or even to keep up with the discussion. Teachers with good insight into social interaction may observe that in a discussion, student utterances are often very difficult to understand. It's tough to know what to do with an utterance that is unintelligible—the student and the teacher may both feel embarrassed. Finally, at least one participant will likely mention that one worry is having one student or a small group monopolize the discussion, while other students lose interest or feel disenfranchised.

18. At this point introduce the Four Steps Towards Productive Classroom Discussions to participants, along with a brief description of why each step is important. Provide each participant with a copy of Reproducible 1.1c. Your presentation should include the points on this reproducible. The reproducible also includes discussion questions you may use. Ask participants to work in small groups to talk about the questions. Facilitate a large-group discussion.

Four Steps Toward Productive Classroom Discussions

Step 1: Helping Individual Students Clarify and Share Their Own Thoughts

Step 2: Helping Students Orient to the Thinking of Other Students

Step 3: Helping Students Deepen Their Reasoning

Step 4: Helping Students to Engage with the Reasoning of Others

19. Let participants know that Sessions 1.2 through 1.5 in this chapter will help them successfully work through these four steps. In each session, participants will focus on one of the four steps and learn about talk moves that will help them accomplish the step.

Part 4: Summarizing

20. Summarize the learning from the session. Hold a ten-minute wrap-up discussion in which participants summarize what they observed and what

they think they have learned. Use this discussion to gauge whether participants need more or less time to think about the overall rationale for using classroom discourse strategically in math. Provide participants opportunities to reflect on and respond to questions such as the following.

Session 1.1 Summary Discussion Questions

- What is your most pressing question after viewing these clips and thinking about the four steps?
- What specific things do you want to know more about?
- Going back to the five reasons for using classroom talk (Reproducible 1.1a), which ones now seem most convincing to you?
- Do you see connections between the kinds of classroom talk you saw in the video clips and the five listed benefits of using talk? Explain.

Suggested Reading

Suggest participants read *Classroom Discussions: Using Math Talk to Help Students Learn, Grades K–6, Second Edition* (Chapin, O'Connor, and Anderson 2009), Chapter 1: "An Overview," if they have not yet done so.