## Video Analysis

## Facilitator Notes to Support the Analysis of the Video for

## "The Case of Jennifer DiBrienza and the Addition Strings Task"

The teacher supported students' ability to work through the problem without taking over the thinking for them and thereby lowering the demand of the task. She did this by honoring students' thinking while guiding it in productive, disciplinary directions. In so doing, she supported students' authority while simultaneously holding them accountable to the discipline, hence sending the message to students that ***they*** were capable of finding a generalization to solve any problem, to describe how they solve the problem, and to notice patterns and relationships among a set of addition equations and the strategies applicable to the set of equations. DiBrienza's intention was to **build procedural fluency from conceptual understanding** (Effective Mathematics Teaching Practice 7).

The teacher **established clear goals for student learning** that she used to guide her decision-making during the lesson (Effective Mathematics Teaching Practice 1). These goals focused not on what students would do during the lesson but rather on what students would understand about mathematics as a result of engaging with the task.

**Mathematics Learning Goals: Addition Strings Task**

Students will understand that:

- Fluent addition strategies use number relationships and the structure of the number system.
- Numbers can be decomposed and added on in parts, not just by ones.
- Noticing regularity in repeated calculations leads to shortcuts and general methods for adding numbers.

Specifically, in her choice of students to share strategies she called on a student who used a variety of strategies. She called on students who counted on and then next had a student who decomposed and made a ten with the ones. Each time she was careful to have several students in the class repeat the student's strategy. She was also intentional when using tools. She modeled the use of an open number line, which was a new tool being shared with the class (lines 11-12, 36-37, 71-73). She also modeled the use of the hundreds chart (lines 58-64). She pressed students to come up with a generalization (goal 2) by encouraging students to notice a pattern being used when solving for the sum of each problem (lines 38-53), to use repeated calculation as shortcuts for adding (goal 3) (e.g., counting on, lines 10-21, 34-37, and make a ten, lines 22 and 30.)

The teacher selected and **implemented a task that promoted reasoning and problem solving** (Effective Mathematics Teaching Practice 2). This task, although it appeared simple because it relied on the use of prior knowledge, required students to use what they knew to solve two-digit addition equations that they were not yet familiar with as well as to look across the set of equations to find a pattern in their problem solving strategies. We would consider this a procedures with connections task because students in the class entered the lesson with knowledge of how to calculate 7 + 3 and with some understanding of the base ten number system.

The teacher also **posed purposeful questions** (Effective Mathematics Teaching Practice 5). While some questions served to gather information and required little in-depth thinking (e.g., lines 5 and 20), other questions asked students to explain what the other had said (lines 24-25) or to explain more about their own strategy (e.g., lines 9 and 24), and some questions challenged students to explain what they were doing and why it works (e.g., lines 51, 73-74).

Throughout the lesson, the teacher **elicited and made use of student thinking** (Effective Mathematics Teaching Practice 8). She began her interactions by asking students to try to understand what another student did. She consistently asked students to explain how he, she, or another student arrived at a sum (e.g., lines 3, 9, 13) and then using what a student said she pushed students further (e.g., lines 24, 73-74). In this way she first assessed what it was that students were doing and then asked a question that would advance the students thinking further towards the goals of the lesson.