

Discussing Addition Strategies

The challenge for any teacher is to figure out what strategies students are using currently and how successful they are in using them. With a sense of this, the question becomes how to move students toward more efficient strategies without pushing them into using a strategy by rote that they are not yet ready to understand and therefore cannot yet use meaningfully.

One thing that helps students try, and eventually adopt, new strategies for adding, is having many opportunities to hear a variety of strategies named, described, and modeled. There are many ways that you can build these opportunities into your math class, as you talk with students at work, and during whole class discussions. Consider the following examples:

This teacher is introducing Roll and Record to the class by playing a game with a partner. Notice how she very briefly and naturally models a strategy that she has seen at least one student in the class using. She is not teaching students how to count on. She is sharing counting on as one possible way to add two numbers, expecting only those who are able to make sense of it to use it.

Teacher: I rolled 5 and 3. So now I need to add those numbers together. I'd like to show you something that Emilia does when she adds. She starts with the higher number, 5, and then she counts, 6, 7, 8 [points to the 3 dots on the other dot cube]. So I am going to write an 8 in the box above the 8 on my paper. William, your turn.

This teacher is discussing a Math Workshop in which Double Compare and games that involved adding two dot cubes were available. Notice how she helps students name and record the strategies they are using.

Teacher: When you were playing *Double Compare*, *Roll and Record*, or *Five-in-a-Row*, how did you figure out how many you had?

Bruce: When we played, Chris thought he had a taller number than I did. He said "Me" but I said, wait, maybe you don't. So we counted and he had 14 and I had 19.

Teacher: Double-checking is always a good idea. Who has another idea?

Lyle: If you memorize it then you don't have to count. Like 3, you can say 3 and don't have to count it and if the other card is 4, you could just say 3, 4, 5, 6, 7.

The teacher sketches two cards showing 3 and 4. She labels the pictures on the 4 card 4, 5, 6, and 7.

Teacher: So you did something called *counting on*. What are some other ways we could add 3 and 4? [She displays cards and dot cubes, each showing 3 and 4.]

Isabel: First count 3, then count 4. 1, 2, 3, 4, 5, 6, 7. [She counts each dot on the dot cube].

The teacher draws dot pictures of 4 and 3, and labels each dot with a number.

Teacher: Who else *counted all* of the dots or pictures? Who used a different way?

Nicky: I did it sort of the same as Isabel, but I used my fingers. [The teacher has Nicky come up to chart paper. She traces three fingers of one hand and four of the other. She puts a number inside each finger.]

Diego: I saw 3 and 3. I knew 3 and 3 is 6, so 3 and 4 is 1 more. That's 7.

Teacher: All right, Diego used a *doubles combination* that he knows: 3 and 3 are 6. He used that to help him with 3 + 4.

She models Diego's thinking on the chart paper with 2 equations:

$$3 + 3 = 6$$

$$3 + 4 = 7$$

Chris: I just know that 3 and 4, that makes 7.

Felipe: You could do 4, 5, 6, 7.

Teacher: What Felipe did, that's called *counting on*, just like Lyle's. [She records Felipe's way underneath Lyle's.] There are many different ways to add, so I am making this chart to remind us all of the different ways we came up with.

This class is discussing Double Compare. They have turned over a 9 and a 6 and now are sharing ways to add those numbers. Notice how the teacher helps students name and describe the strategies and how she decides to delay the discussion of a strategy that she knows all but a few students are not ready to grapple with.

Teacher: What are some ways I can add these two numbers?

Edgar: [points to the 9 card] 9. [Then he points to each object on the 6 card as he counts on.] 10, 11, 12, 13, 14, 15.

Tamika: You can start with 6 and then count the same way. [She demonstrates.] 7, 8, 9, 10, 11, 12, 13, 14, 15.

Leah: You can also count each thing by 1. [Leah demonstrates.]

Teacher: So far we've gotten 15 all three times. Edgar started at 9 and *counted up* 6, Tamika started at 6 and *counted up* 9, and Leah *counted everything* and they all got 15.

Tuan: I think it's supposed to be 16.

Neil: No, it's not 16 because, well, you use 1 up from 10 and that takes away from the teens. So subtracting 1 equals it to be 15.

Teacher: If that's confusing to other first graders, you might not want to use that way, but it is something to think more about.

Stacy: I think it's 15 because let's say this is a 10 and this is a 6. It would be 16 but 9 is 1 less than 10, so the answer is 1 less than 16 and that's 15.

Teacher: So you were thinking kind of what Neil was thinking. Let's flip over Shaquana's cards [0 and 5]. What do you do with a zero?

Leah: Just don't count it. So Shaquana has 5.