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Please enjoy this complimentary excerpt from *Teaching Math to Multilingual Students* by Kathryn B. Chval, Erin Smith, Lina Trigos-Carrillo, and Rachel J. Pinnow.

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EXAMINING TEACHING STRATEGIES THAT INFLUENCE PARTICIPATION

Dr. Chval was working with Ms. Keller, a third-grade teacher, to enhance the participation of multilingual learners in her mathematics classroom. Ms. Keller asked Dr. Chval to lead a lesson about solving word problems. To begin, Dr. Chval wrote two sentences on the board about balloons (i.e., “Dr. Chval has 24 balloons” and “15 balloons popped”) and then solicited different questions from third graders that could be asked based on the information.

As you examine Transcript 3.1 from Ms. Keller’s classroom, notice

- ▶ how we describe the strategies the teacher uses, and whether you would describe the strategies the same way;
- ▶ how the teacher engages multilingual learners; and
- ▶ how the teacher asks students to create questions to include in the mathematics problem.

As you read, focus on what you can learn rather than on what the teacher should have done differently. The left-hand column contains the transcript, and the right-hand column contains an annotated description of the instructional strategies.

Transcript 3.1

TRANSCRIPT	TEACHING STRATEGIES
<p>Dr. Chval: Dr. Chval has 24 balloons [<i>writes “Dr. Chval has 24 balloons” on the board</i>]. Does everyone know what a balloon is?</p>	<p>Spoke and wrote information on the board. Asked the class if they were familiar with the word <i>balloon</i>. (This could have been improved if Dr. Chval had a physical balloon.)</p>
<p>Students: Yes.</p>	
<p>Dr. Chval: Yes. Okay. What happens if I take a pin and I stick it [<i>gestures to pop a balloon</i>] in the balloon?</p>	
<p>Students: It’ll pop.</p>	
<p>Dr. Chval: It pops and explodes [<i>gestures an explosion</i>], right, and you don’t have your balloon anymore.</p>	<p>Asked the class about popping balloons and included a gesture of popping a fictitious balloon. Used gestures to mimic a balloon exploding. Repeated the word the children used (i.e., <i>pops</i>) and introduced <i>explodes</i> to help build meaning for <i>pops</i>. Emphasized the balloon goes away to set up the idea of subtraction.</p>
<p>Erin: And if you took away that balloon.</p>	
<p>Dr. Chval: You’re taking away that balloon, [so] you don’t have it anymore. So, let’s say that 15 balloons popped [<i>writes “15 balloons popped” on the board</i>].</p>	<p>Repeated Erin’s contributions to validate them and revoiced them (e.g., “You’re taking away that balloon, [so] you don’t have it anymore”). Wrote each sentence, which provided a visual referent, and stopped to discuss the first one to ensure understanding before writing the second. Wrote the second sentence using the word <i>popped</i> that the students gave her.</p>
<p>Michael: So, write “24 minus 15 equals . . .”</p>	

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TRANSCRIPT	TEACHING STRATEGIES
Dr. Chval: Okay. Now, you've been doing some problems in here in math, and sometimes you add and sometimes you subtract. How do you decide whether you add the numbers or subtract the numbers? How do you decide that? Yes?	Ignored Michael, who wanted to get to number expression and answer a computation situation. Laid the foundation for a larger mathematical picture in which the emphasis is not on a single problem, but on thinking about the process of decision making for different problem-solving situations.
Craig: Sometimes if it says that, like, you have 24, then somebody else gave you more, that means, um, addition.	
Dr. Chval: That's addition.	Revoiced <i>addition</i> to emphasize.
Craig: It's like if, um, you had 24 of them and—and somebody stole 15 of them.	
Dr. Chval: Okay, and then you would have less, right?	Focused the class on the idea of having less to set up the concept of subtraction.
Craig: Yes.	
Dr. Chval: And when we have less than, we subtract. So, that's what you have to think about when you—	
Tad: What's he talking about?	
Dr. Chval: He said that if you have 15 and you get some more that's going to be a—	Revoiced Craig's contribution.
Tad: You lost 15.	
Dr. Chval: Let's say you had 15 more than. You're going to have an addition problem, right? Because you're getting more. But if I lose some—	Emphasized the importance of sense making in problem solving.
Tad: You lost 15.	
Dr. Chval: He said—we're trying to decide, <i>When do we add 15, and when do we subtract 15?</i> So, when I get a problem, I have to make a decision. You're going to start working with multiplication, and then you're going to have another one where <i>Do I add, do I subtract, [or] do I multiply?</i> Right, and so how can I make sense of a problem? How can I figure out what to do with a problem? I have to make sense of it. So, usually you get information, and then there's a question. Who thinks they know what my question is? Okay, so raise your hand if you know it. <i>Dr. Chval has 24 balloons. 15 balloons popped.</i> So, what's the question? Dr. Chval wants to know.	Introduced the structure of many word problems (i.e., given information, then a question). Asked students to determine the question rather than giving it to them.
Melody: The answer.	Repeated what she wrote to give students more time to think about a question. Clarified the request for students to generate a question.
Dr. Chval: No, I don't want to know what the answer is. I want the question. Ellie?	Clarified that she does not want a numerical answer, but rather is looking for a question.
Ellie: 11.	

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TRANSCRIPT	TEACHING STRATEGIES
<p>Dr. Chval: You're giving me answers, I don't want a number yet; I want a question. So, what would be my question? <i>Dr. Chval has 24 balloons. 15 balloons popped.</i> I want to know what the temperature is outside. No, I don't want to know that. What do I want to know about the balloons? What's the question? Do you have a question?</p>	<p>Repeated what she wrote to give students more time to think about a question. Overall, she repeated the question three times and pointed to words as she read it. Provided an example of a question that is ridiculous. Gave students an opportunity to generate questions, which was hard for them to do since they had not done it before.</p>
<p>Leticia: How many popped?</p>	
<p>Dr. Chval: How many popped? Excellent question. That's exactly right. How many popped? Who has a different question?</p> <p>We could write lots of questions. How many balloons popped? [<i>Writes "How many popped?" on the board</i>] Raise your hand [<i>gestures hand raising</i>]. "How many popped?" could be a question. Who has a different question that we could use? Do you have a different one? [<i>Points at a student</i>] No. Do you have a different one? [<i>Points at another student</i>]</p>	<p>Revoiced the question and validated the response from Leticia, a multilingual learner, by stating it was an excellent question and highlighting there were no limitations on questions. Reiterated that a multitude of different questions existed that could be asked in this situation. Then documented the question on the board.</p> <p>Requested additional questions.</p>
<p>Tiffany: Yes, um, how, um, many do we have left?</p>	
<p>Dr. Chval: How many do we have left? Perfect. That's a great question. How many are left? [<i>Writes "How many are left?" on the board</i>] We could ask that question. What's another question we could ask?</p>	<p>Revoiced the question and validated the student's response. Then documented the question on the board and requested additional questions.</p>
<p>Marquese: How many does she have now?</p>	
<p>Dr. Chval: How many does she have now? Yes, excellent. So, could you see these questions? Could Ms. Keller give you some questions next week that say how many popped or how many are left?</p>	<p>Revoiced the question and validated the student's response. Then documented the question on the board.</p>
<p>Luke: Well, actually, how many popped because it's 15 so that wouldn't really make sense.</p>	
<p>Dr. Chval: You don't think that one makes sense? Well, it does because sometimes teachers just want to see if you can read a problem. Right? So, could you read the problem and know, "I'm not supposed to do anything. All I have to do is look for the information." So, what was the question you just gave me, Marquese?</p>	<p>Reiterated the validity of the question, which is significant since a peer, Luke, openly challenged the validity of or attempted to discredit Leticia's contribution. In this situation, Dr. Chval did not allow this to happen and used her authority to validate the multilingual learner's contribution. Moved on, returning to Marquese's response.</p>
<p>Marquese: How many does she have now?</p>	
<p>Dr. Chval: How many does she have now? [<i>Writes "How many does she have now?" on the board</i>] Okay, very good.</p>	<p>Revoiced the question and validated Marquese's response. Then documented the question on the board.</p>