Leaders in Mathematical Thinking
Alex Lawson - Moving to Numerical Proficiency

>> Students moving from direct modelling to numerical proficiency is the continuum of strategies that I've talked a little bit about. And the four phases that they go through are first direct modelling strategies, then they start to count on you don't see the whole strategy anymore, I only see part of it. And they're counting on methods become more sophisticated. In fact, they become so quick with it that sometimes, if they're just doing it mentally, you might not even be aware they're still counting on. But then we want to progress to working with the numbers. And so working with the numbers, you don't see it. You just hear it, where they begin to use mathematical ideas to deconstruct numbers, re-put them back together in a way that is more efficient, and again, has legs. So for example, towards the end of the progression would be, "up over ten." And that's a strategy with legs. And how does a child use "up over ten?" They think with five plus even, they might think, well, I'll commute, so I'll start with the seven. And then inside the five I know there's a three, and that gets me to ten. They think about, what gets me to ten? They pull that out of the second addend, and then add on whatever's left. Well, there's a beautiful strategy, because they can use that with many, many calculations. And they can use it when they hit double-digit addition, just moving -- thinking of the double digits and getting to the next decade number, and tens, and then the remainder. Some of the challenges with this shift have been, I would say, in part what I've just said; that it's really honing and refining that message. Because in the beginning, we thought, well, if we allow kids to use different strategies, it will allow more kids to get in on the calculation and be more comfortable with mathematics; they'll enjoy it more, they'll be better at it. But it meant that some kids did end up getting stuck at a certain point, and they didn't progress beyond it. So for example -- I'll exaggerate it -- counting three times, where a kid models five, they model seven, they count a third time to find twelve -- I have been in some classrooms where kids are still using that strategy with double-digit addition in grade four, and that's really -- they should have moved beyond that. But in sympathy with the teachers, we weren't as clear about the fact that there is a progression. It's not linear, and not every child does everything. But there is a progression, and we need to be moving along that progression and supporting our students to do that, rather than getting stuck at a certain stage and not progressing.