

Leaders in Mathematical Thinking

Alex Lawson - The Continuum of Instructional Strategies

>> There are, I think, many pieces to the classroom. It's not one piece. So absolutely the three-part lesson done really well is a very important piece. But there is -- I actually have a matrix with other pieces around it that children need. So we do string work, which is just quick calculations, mental calculations, that work on one strategy. We do a lot of repeated problems, there they solve one problem, in a large way had a discussion, but then they get to do them repeatedly, because they need that, on their own or with their partner, so they can practice it. They need that opportunity. There are games in these classrooms, and the kids are accustomed to playing them. And it's not just that they go off and play and come back and we don't know what they did; rather, it's part of them learning the math. So the games are handed out to the kids so that they meet the needs. So if a kid is counting three times, maybe we're going to give him a counting on game, to try and push him a little bit. And that's going to be the conversation the teacher might have with them. And when we come back on the rug, we'll actually discuss some of the strategies that help them out with the games, or things that they try. So games, word problems -- there's a lot of model development. Good models that really support mathematics -- so I don't mean just manipulatives, I mean models where they are tools for thinking. And you'll see those in classrooms; five-frame development, ten-frame, Rekenrek, the number line -- depending on how old they are. So you would see that. And then the quality of the discussion, so a lot of work on the teacher modelling, what good math talk looks like and helping kids learn how to speak to each other mathematically. This doesn't just happen. It's hard work on the teacher's part. Well, that depends on the child, quite frankly. If the child is in a classroom where it's everyone is doing exactly the same direct instruction lesson, where they're trying to follow the teacher, and they can keep up with that -- for some kids, that's a problem. Not for all kids, some of us learnt that way. But for some kids, that's a problem. In other classrooms, maybe the activities are actually not what that child needs at that point, so that could be a frustration. Maybe their math partner is not really a good pairing with them. It depends on the child. There could be many reasons a child is struggling. Well, that is part of why I think that we have to have -- whether it's a continuum that we developed or a different one, you need something to tell you, what should this progression look like, so that the kids who are -- you're trying to get them to use some particular strategy, and they're not there yet, they need to go back. Then you have to have some way of thinking, well, what would be prior to this, and having that progression, if you're going to take a child back. And unfortunately -- and I have total sympathy for the teachers, because that was definitely my experience as a teacher -- it's tough to do. I think -- I don't know if it's problems, so I think that what they're concerned about is that it's only problem-solving, and that somehow children aren't going to learn about numbers. But if problem-solving is well done, they actually do learn about numbers. It depends how the problems are constructed. And also, in a good classroom, you need more. You need the problem-solving, but you need some other things around it. So in speaking to the public, I do think that we have to listen, and reassure them that children are both learning with

understanding, and they will know their facts by the end of a certain -- for most children by the end of whatever stage it is that we're looking at. But just knowing the facts is not enough. They need to have both. And we know that, so they'll have both in a good classroom. For superintendents and senior leaders, I think that the kinds of math that we're talking about, if it's really going to take hold and we are going to benefit from it in the way that some countries have, we need more math capacity. This is our problem in Ontario. We don't have sufficient math capacity to have teachers learn some of this material. They did not go through it, and they need PD if they're going to really try and embark on this, because I think it's a tough road, or road to hoe. So they need math capacity, and I don't think that you can take, unfortunately, someone who's good at writing literacy PD, and then all of a sudden they're the math person. I think that's -- you know, I think that's hard. But I don't think that's always going to work, that the people really need to know the math well, and have a great deal of experience in order to do the PD that's necessary in the boards. So I think it's hard. I think that as they're working through things, it's hard to do it all on your own, having done it both ways myself. That really, if you can interest a partner who's going to work with you and you can try something out, and they can try it out, or get more of your staff in on it, whatever you're going to try out -- that you need that kind of support. It's very hard to be a teacher in isolation. You need probably some support in terms of PD, but also colleagues that you're working with.