

FRAN DICKINSON: My name is Francis Dickinson from the San Carlos Charter Learning Center. I teach 5th and 6th grade Math and Science here at a K-8 school.

MARGIE TRAINER: I'm Margie Trainer. I'm the math coach for the San Carlos school district. And I work with students and teachers from K through 8th grade.

STACY EMORY: My name is Stacy Emory. I'm the curriculum and resource coordinator at the San Carlos Charter Learning Center, K-8 elementary school.

MARGIE TRAINER: I'd like to welcome you to the San Carlos school district and we are at the site of the San Carlos Charter Learning Center, which is one of the earliest startup charters in California.

MARGIE TRAINER: Fran, I'd like to ask you if you could talk to us about your understanding of re-engagement lessons.

FRAN DICKINSON: Re-engagement lessons for me are all about taking tasks that learners already participated in and digging deeper; getting learners to revisit some of the big ideas and maybe even take or extend the concept a little bit further. In today's lesson, we're going to be looking at a 5th grade release MARS task, uh, "Buttons;" it was given in 2003. We're looking for learners to dig a little deeper with the "Buttons" task and revisit the main ideas of multiple representations. In the original task the learners were looking at a growing pattern. Moving them forward, I want them to take that pattern and extend it into T-charts and into a graphic representation.

MARGIE TRAINER: Would you describe how you went about preparing for this lesson?

FRAN DICKINSON: So as we look at learner work E, I was looking for how different the learner interpretations of the pattern were. I was looking specifically at what types of numeric patterns they could describe. Um, in some of the student work we'll see that some learners saw three groups of tiles growing in each stage. So if we're looking at stage 3, they would have three groups of 3 for that stage plus the one button in the center, which was the black button. Purposefully looking at two different ideas, my idea is, or my intent today is to get the learners to investigate two different ways of seeing the pattern grow. Not necessarily their own, but two learners in the class and to investigate that strategy in multiple ways. So we're going to look first at, um, pictorial or pictures. We're going to have the learners build using models. We're going to have some (inaudible) out...square tiles, sticky notes, whatever they need. Um, in addition to that, we'll then move into a verbal description, a T-chart, and then finally a graphic representation of this rule.

MARGIE TRAINER: Fran, would you describe for us the general flow of your lesson today?

FRAN DICKINSON: Sure. We're going to start today with a number talk, "what's my rule?" number talk, where I will have a rule in my mind as the learners are calling out input numbers. As the learners give me input numbers, I'll generate output numbers for them. And then we'll switch it up somewhere in between and have them give me output numbers. As the learners finish the input/output table, I'll have

them come up and plot the points on a graph. Once we finish plotting the points on a graph, we'll then switch gears and start looking at student work in our lesson. The first phase of our student work will be to look at the two different ways of explaining pattern 11 in the "Buttons" task. The next phase of the lesson we'll have learners taking a look at two different interpretations of pattern 11 or stage 11 of the "Buttons" task. What I'm looking for during this phase of the lesson is for learners to make some similarities or differences, or to identify some similarities or differences in the two divergent ways of thinking about the task. After having the learners investigate those differences and similarities, we'll move then to digging a little bit deeper with each of the learners. So in table groups of four, pairs of learners will investigate only one learner. So if Margie and I were partners, Margie and I would investigate, let's say Learner A. And as we dig deep with Learner A, we're going to first make a pictorial representation of Learner A's thinking, which will involve modeling, it will involve drawing. Then we'll move on to making verbal representations. So in our own words, how would we describe Learner A's thinking? Third step in this phase is going to be having us, or we would generate a T-chart for how Learner A was thinking. And then lastly, if we have the time, time permitting, we'll get the learners to graph Learner A's thinking. The other side of our table, we'll see two learners investigating Learner B. Our intention with dividing the groups up and having them look at Learner A and Learner B separately is that we can have the learners dig deep separately, and then come back together and share out what they see. And maybe see the similarities and differences between Learner A and Learner B on a very detailed level.

The primary focus of my lesson today is going to be digging deep on the in and out table, and really exploring how Learner A and Learner B differ. So what we'll do is we'll first start out with the x, y charts for Learner A and Learner B on chart paper in front of the class. But then we'll expand those T-charts to reveal how the learners are thinking and we'll model that numerically.

MARGIE TRAINER: Fran, it's my understanding that the purpose of doing the number talk with the in and out tables and the graphing was because you weren't sure that your students had had much experience with graphing coordinate pairs, and you wanted to kind of set the stage for that, so if they get to that in the lesson, that they'll have some background knowledge to be able to plot what they see of Student A or Student B, is that correct?

FRAN DICKINSON: That's correct. The learners are just beginning to experience how to plot points on a graph and we've been using rules that extend into all of the quadrants of the coordinate graph. But today we're primarily focusing on the positive coordinates.

MARGIE TRAINER: Fran, can you speak to us a little bit about why you decided to have them work in pairs? What is the power behind that decision?

FRAN DICKINSON: So the idea behind getting learners to discuss in pairs and then in a larger group of four, and then with the whole class is really about engaging the learners and the task, and engaging them in discourse. One of the things that I've pride myself on in the last couple of years is really working on discourse in the classroom, and getting learners talking math. I'm looking today for those micro conversations to happen on small levels and then to extend that into a larger class. I think lots of times

if we engage in a large scale conversation without first having a think-pair strategy or a small group conversation that there are going to be learners that aren't really engaged, or didn't have time to process frankly or to ask questions. And I think it just provides a safer environment for learners to kind of hash out their thinking, talk to one another.

MARGIE TRAINER: Talk to us a little bit about your class.

FRAN DICKINSON: Okay. This is a class of 6th grade learners. We loop children here at San Carlos learning center, for the most part. I teach multi-age levels in Science and 5th and 6th grade at the same time. But then with the 5th and 6th graders, I'll teach them math for 5th grade and for 6th grade. So this is the second year I've had these learners, so I know these learners really well; I've been working with them for over a year now. They're a strong class.