

CECILIO DIMAS: So Antoinette, we have just finished comparing lines and linear equations, the FAL [formative assessment lesson]. And we've been going...we went through the process of looking at student work, analyzing what their current understanding is, and figuring out what next steps could be leading to the FAL. As part of that, you did re-engagement where you're really making sure that students understood how to read a graph, making sure that they understood the graph components, scale, labeling the x and y axes, what does that tell you if it's a straight line, making all those connections about constants and constraints and slope, rate of change. So this I feel really created a space for all of that to surface. Time went by really quickly.

ANTOINETTE VILLARIN: Yes.

CECILIO DIMAS: So how do you feel things went?

ANTOINETTE VILLARIN: I was really happy with the pacing of the lesson. I felt like I didn't rush through things when I was getting nervous about time, because I know we had paced out every single part of the lesson to, like, five or ten minutes and we wanted to be constantly moving. So I felt really good with the pace.

Ideally, I think when we had originally planned it, we were hoping to get the prism cards passed out, but I think where it ended with them having a chance to walk around and check in with each other to share, I think was kind of a good ending point. And I think we can kind of move on from there which will be good. It felt good. I felt like I was hearing them start to use a lot of the language, which is what I was hoping for.

And then I think we need to work on written justification. Maybe we were practicing building an argument verbally and I was hearing that, but I think writing, they struggled a little bit on the record sheet where they were writing matches, and how they were going to say what the reasoning was behind that match. I think we definitely need more practice with that, but I think it was good to have them write because I think it captured their thinking in some form.

But I was really happy with what I was seeing. I was seeing struggle, definitely with some pairs -- I was seeing some struggle. And I felt like the cognitive demand of the task was really a high one, so that everybody felt like they were being challenged by it. Like, students that kind of understood rate of change from the very beginning to -- to those that are still...still grappling with that concept.

CECILIO DIMAS: It was interesting to see the different strategies that were surfacing. Many students were...though I was able to observe, were some of the students were leaning on what they understood about slope and trying to make that connection. Some were really looking at rate of change. It was interesting to see some students struggle, though, where they identified the rate of change, but when they were pairing cards up, that had...they were looking at slope and they were pairing up two top prisms or two bottom prisms, because they saw that there was a similarity with the slope and rate of change, but didn't connect it back to the context of the story. Did you see that too?

ANTOINETTE VILLARIN: Yes, I saw that quite a bit where the rate of change was...where the rates of change were the same, but I...like, the starting situation was not a match. And yeah, so they were forgetting to connect it back. So that's something I think tomorrow when we continue, like, I'll probably have things that I'm seeing as a teacher and maybe post that up, and things for them to consider. I can probably even add to the poster, like consider the context of the story. Like, constantly refer back to the flow of the liquid and if I have to do that again and model it for everyone again, hopefully I make that. But yeah, they were looking more at a rate of change than starting situation.

CECILIO DIMAS: So were they able to utilize some of the structures? Because you were focusing on math practice number 7. Were they able to utilize some of the structures you were hoping they would?

ANTOINETTE VILLARIN: I did. I was seeing a lot of people write...I say more or so in this class, too -- actually write on the cards and show kind of a vertical change and a horizontal change on the card, and actually plotting points. Because that was one of the things that we had talked about previously after the pre-assessment -- that sometimes you'll be given a graph where there aren't ordered pairs given, and you're going to have to try to find points that you can use to really help you find the rate of change quickly or accurately. And I saw some kids point, like, writing coordinates...not coordinates but actually locating points on the graph, which is neat to see.

CECILIO DIMAS: You also had mentioned and planned for them to...the students to utilize math practice...engage in math practice number 3 of constructing arguments and critiquing the reasoning of others. After today's lesson, how do you feel the students did? And then what are some possible next steps that you have in mind to continue building math practice number 3 in your class?

ANTOINETTE VILLARIN: I think they -- I think they were really...they had language to help them really construct arguments. Like, "Well, I think this is a match because of -- because of the starting situation or because..." But I think critiquing others, like, learning to disagree and challenge, I definitely think they need more practice. Because I think when they are disagreeing with somebody, I think they have a hard time explaining why. They'll just say, "No no no. This is what I got," versus like, "Well, I challenge you because this is what I see," or "I disagree with you because of what I see." So I feel like I need next steps on that practice with critiquing -- critiquing others.

CECILIO DIMAS: And one of the overarching math practices that you were focusing on is perseverance and making sense of the problem. So as you were working with different groups of students in different pairs, when you saw students who were struggling, what were some of the ways in which you helped them?

ANTOINETTE VILLARIN: Well, since we had done G2 and G6 as a whole class, I thought that would be a perfect start to go back to. So a lot of times when I saw...and kids would tell me, they would say, "I -- we're stuck, Ms. Villarin," or "We kind of get it, but we don't." And I would say, "Well, what do you have matched?" And they would only have, like, maybe another set matched. So we went back to G2 and G6 and I would ask them, "Do you know...do you have G2 and G6 matched?" I said, "Okay, let's talk about that. Like, why is that a match?" And we went from there as a starting point. So then at the end of that, I made sure to highlight, "Make sure you consider -- and that's why there's a poster up there -- you're looking at starting situation, you're looking at constraints, and you're looking at rate of change, and anything else that you think might help you find the correct combination."

CECILIO DIMAS: One of the student pairs I was observing, they were having a discussion about slope. So it's a different group. But they were struggling with...they had matched many that had a similar slope, but didn't relate it back to the context. So they used one of the considerations when they were looking at the rate of change. And I also saw some students who were looking at the starting situation only. So when they...so when they were looking at multiple considerations, they...and also anchoring it back in the context, they were able to self-correct. So I think that some next steps for the students would also be to, not necessarily check their work for checking their work's sake, but could they use additional ideas and concepts that they have been working on to strengthen their argument. So I think if we approach it from strengthening our argument rather than checking your work, I wonder if there'll be more buy-in.

ANTOINETTE VILLARIN: Yeah, so using that language.

CECILIO DIMAS: Using that language that we...we want to help each other with building the strongest argument possible, to help convince others and ourselves that we are in agreement with what we're seeing and understanding.

ANTOINETTE VILLARIN: Yeah. So do you think, like, that list we had of building an argument where it said to consider starting situation, the rate of change, and the constraint, do you think adding context to that would be good, and using that as a starting point?

CECILIO DIMAS: Does it match the context?

ANTOINETTE VILLARIN: Yeah.

CECILIO DIMAS: You also had mentioned that some of the students surfaced that they were using time.

ANTOINETTE VILLARIN: Yes.

CECILIO DIMAS: So I think adding that to the poster for the continued engagement tomorrow with it, I think would be...those are some great ideas.

ANTOINETTE VILLARIN: Okay. And how much more time do you think they'll need, like, in your opinion, like, seeing how they worked to make some changes and then get ready for the next set of cards, which is the prism? Do you think five or ten more minutes?

CECILIO DIMAS: That's a good question. I would be curious to see -- and I don't think we collected it -- the recording sheet.

ANTOINETTE VILLARIN: Yeah.

CECILIO DIMAS: But I'd be curious to see where they're at with G4, G8, and G9. How did they fill in the missing information?

ANTOINETTE VILLARIN: Okay.

CECILIO DIMAS: This particular pair that was sitting right over here, there was some disagreement on...

ANTOINETTE VILLARIN: The scaling.

CECILIO DIMAS: ...the scaling but also they had agreed that there was a certain change of rate that they were...they agreed with what they were looking at, but the way in which it was drawn, there was disagreement. So they were grappling with, "How do I know that this is the line that goes with this graph? I know that it's supposed to be increasing." But they were struggling with how to...how to draw it. So I wonder if...conversation to your question about G4, G8, and G9, maybe having them do some partner conversations specifically about those cards before you go to whole class.

ANTOINETTE VILLARIN: Okay.

CECILIO DIMAS: And then moving into a little bit more time to finalize their graphing. But for those students who are ready, you slip them the prism cards and then they start...start moving onto the prisms.

ANTOINETTE VILLARIN: Okay. I feel like it might almost be valuable to take, like you know how we had a discussion about G2 and G6, is like find another match that almost everyone in the class agrees on, and discuss that to help lead into the G4, G8, G9 cards that don't have scale on them to make sure the components are the same. But is that giving too much? I don't know.