MIA BULJAN: So, yeah -- so we started on the carpet because I wanted to talk to them in sort of like a -- a more intimate sort of way about how we were going to relate to each other during math. And I wanted to introduce this idea about tools. It's a big idea at this grade level, the idea that we could have different tools for different things -- that tools have different attributes.

Kids get really stuck on attributes that aren't mathematical[ly] necessarily -- things like the color of the cubes over the quantity. When you do a dot talk, if you have cubes they get very confused because they're not round the way dots are. So there's like a lot of, sort of negotiation that has to happen around what tools really are and how we represent with math. And so I knew I wanted to bring up this idea of tools, and then also sort of the cultural norms of our classroom around what we do with tools.

So one of the big ideas that I wanted to do was that you don't helpfully -- because kids like to be helpful -- that you don't helpfully clean up someone's tools for them. That when it's clean-up time, you don't just start grabbing stuff and putting it away because you don't know what someone was building with that. And that might be something that they need more time with.

That's another idea, that things don't finish right away. So my idea was to take -- I was thinking of, like, you know, going up one, down one -- a stair situation. I knew they would see something in the stairs, maybe -- I don't know how mathematical it would be, but they would recognize that there was something about that stair -- that stair-stepping sort of configuration of those cubes.

So my idea was to present this like "I'm thinking about something." And first I wanted them to sort of imagine what math I was thinking about. And they did pretty good. They thought about it, you know, it resembled a pyramid, or they thought that -- they sort of got that idea like there's matching on both sides, that there's like an up and a down.

So they were sort of like getting at those ideas, which was good. I think just the idea that, like, that this represented an idea was new for them. That this was like "there's something happening here" was new for them.

But the big thing was that I wanted to model that my idea wasn't finished. I was still thinking about this idea. And I needed more time with this idea. And so that's what I used to introduce this sort of norm that I didn't want anybody to take my idea apart or put it away for me because I was really still thinking about it.

And so that's going to be really important as we start to do problem-solving workshop, which -- in which case, a lot of times for the little ones, especially, they can't finish it in 15 or 20 minutes. They just sort of get a little bit of traction even sometimes, after 10 or 15 minutes. And it's a really hard time to sort of "Okay, now we're going to move on to something else," which we have to do, because unfortunately I don't teach math all day. I wish I could.

And so I wanted to do sort of like three things there, really, which was use the cubes to introduce [how] we use them to share ideas. Use the cubes to introduce that ideas take time. And then use the cubes to introduce the idea that we don't take other people's ideas apart, that we have to ask before we help them clean up because it might be something mathematically important to us.

So tools are tricky. And I introduce their math bags on the first day of school, and they put their dots in it. And on the first day of school, we use those dots to build very small configurations, like the numbers one through five in different ways. And that was very manageable. And then on the second day of school, we added the Unifix Cubes, so they each got 40 cubes and they -- or 40-*ish* depending on their counting -- and they put those in their bags. And then we did a dot talk and it was a little -- one of my favorite things happened, which is some kids said, "Which one do I use?" And unfortunately right when we got started I said, "You're going to need your dots because we're doing a dot talk," which is sort of something I try *not* to direct them to use a particular thing.

So -- but fortunately no one's listening to me! So Sylas right away said, "Oh, what do I use?" and I was able to say, "Well, surprise me.” Like, you know, “show me what you're going to use." And then -- and he was very vexed by that. He did not like that answer. He was just -- I think he thought it was a trick. He was just kind of looking at me. He was very suspicious.

And then I noticed when I started the dot talk that most everybody was using dots except Trinitie, who was right in front of me was using some dots and some cubes. So right away I was able to ask Sylas to come over and look at her mat and see what he noticed and he was still a little bit, like, "yeah, I see it," you know, and walked off, like, all mad.

So like it’s not natural, necessarily for them -- and especially at this age, they’re very literal, and they want to please you so badly that it’s not natural, necessarily, for them to branch out and think on their own. And so a lot of, in the beginning around tools, is looking at kids who are using them in interesting ways and sort of highlighting that. And there’s always some kid doing something, which is great.

But today, for today’s lesson we’re doing a dot talk. Our first sort of official dot talk did not go that well on the second day of school -- from my perspective. I mean, it was fine, we got through it and stuff happened. But in terms of like the process of the dot talk and the focus of what we’re doing during a dot talk for me got swallowed up a little bit.

Partly because of where it was in the lesson -- it was later in the lesson -- and partly because of -- there was just a lot of moving parts at that point for them to negotiate. So my idea today was to put the dot talk at front of the lesson and to set out dots before we even handed out our math bags, which can be a little distracting in the beginning.

So it’s a difficult decision for me to make because long-term, I want them with their tool bags making decisions, good or bad, about the tools that they’re choosing to use. So for me, it’s hard for me to step back and say “no, I’m just going to give them dots.” But that’s a long-term -- the math bags -- the tools box is a long-term goal.

And my immediate goal is to get them through a dot talk in a really structured way. And so I think -- I think I’m making the right choice. I’ll find -- they’ll let me know if I did it wrong. Their feedback is pretty immediate. But I think it’s the right thing to do, is do the dot talk with just the dots available, and then move into using the bags and exploring a new tool to add to our bags. That’s my hope. Fingers crossed.

Yeah, so the tools are -- the tools are what’s available. And I do purposefully give them the red and yellow counters first, because a lot of what we do in the beginning are these dot talks, and I want them to be able to sort of configure the dots to help them figure out what’s happening. The next thing I give them are the

Unifix Cubes. They're not the multi-links, which can go all directional and become really interesting things like horses and robots and guns. But I give them the Unifix, which becomes swords. They still turn them into stuff, or really, really, really long, long trains, apparently.

But -- so those I want them to start thinking about making tens. And so a lot of my questioning and sort of observing on that second day of that Unifix Cube tool was around, you know, when kids made these long trains, could they negotiate breaking those up into pieces of ten, and how did that affect their counting abilities. Kids were at different places with that. Some kids weren't really interested in that idea at all when I asked them, and that's fine, it's the second day of school. We have time.

And then the next one that I'll introduce today, on the third day of school is the ten -- the base-ten tools. Which are -- there's a ten-stick, which doesn't come apart, and then there are the single cube units. Those are the only ones that we'll do today. So very quickly I want them to start thinking about much bigger numbers. And the ten-sticks, if they can figure out that they are, in fact, always ten, they can be very helpful for building much larger numbers.

They're [the ten-sticks] very vexing in other ways because they can't be broken apart. So if you have anything -- and they can't be hooked together. So if you have anything that requires regrouping, either to subtract or to add, which comes up pretty quickly, there's a lot to figure out there. And so it's really important to me that they understand the Unifix Cubes first, as a breakable -- as a decomposable tool. And that then later we add in the ten-sticks as an efficient tool, but that there's a relationship there.

And then the last thing that they will get are little -- the little flat square tiles. They're squares, and they're flat, and they come in many different colors, but they're for making arrays, usually. You see them like in candy box problems and stuff like that. The kids use them -- well, for everything, but as counters. And also when they are making equal groups a lot, those are the ones that they'll go to, which is good. And that's all that goes in their bags.

Then there's other things that are available in the classroom, including, like, rules and calculators, which are always out. And then I have some stored stuff that I feel -- that the teacher in me wants to stay in sets, like fraction pieces or Cuisenaire rods, or things that it matters if they get mixed up. And so I don't necessarily -- they don't have equal access to those things unless I'm sort of being purposeful with them.

Yeah, it seems like most of them have not -- and/or -- it's very -- okay, so when it comes to introducing kids to new tools, there is -- for me the mathematical purpose is that kids make sense of it. That they make sense of the tool itself.

And so very often when kids are given tools, they're told how to use them. Or they're told that they're for this activity. So "we're doing this activity" and they get a basket full of these tools. And "we're doing this activity, and let me walk you through how you make an exchange to regroup using these base-ten blocks."

And I find that it's more important for kids to make sense of, like, the regrouping process on their own without me imposing that exchange idea. Very few kids actually invent that idea. I've never seen a kid invent the exchange idea. I have seen them take out a ten-stick and put in a train of ten Unifix Cubes that can be broken. So they will exchange, but they exchange tens for breakable tens. They don't take ten ones and take out a ten-stick; that's not really on their radar.

That's a very -- that's a very modeled example of what the regrouping standard algorithm is, like how we use it to do the standard algorithm. So in a lot of ways they are familiar, like they've had tools in their hands but they haven't had to make sense of them on their own.

The sense-making has been either part of the lesson or part of the activity or very directed. And my experience -- and it doesn't matter what grade I've been teaching -- handing them tools, there's always a little bit of a nightmare period of "okay, we're doing that today. Great. That's not quite how those work, but good." And they figure out soon enough, but they will experiment very naturally with lots of different ways to use them.