[AUDIO LOGO]

[MUSIC PLAYING]

KITTEN VAA: So we've been investigating the town of Moncton. And we've been wondering and investigating the question, what caused the town of Moncton to flood?

AUDIENCE: The soil was faster so the water could go through the glacial moraine to the town of Moncton.

KITTEN VAA: So I heard there was a claim. And I heard some evidence. Can someone-- can I have someone repeat what you heard? What was the general claim that you heard?

JESSICA THOMPSON: What you see in the video today is young kids weighing multiple hypotheses, checking each other, doing some fact checks, and trying to get to the heart of, what part of my statement do you agree or disagree with?

JENNIFER RICHARDS: The project that we are working on is really thinking about what certain scientific practices that are central to NGSS look like when working in primary classrooms-- so in grades kindergarten through second grade.

KITTEN VAA: What claim did you hear?

AUDIENCE: I heard that if the glacier of mostly sand and some pebbles in the mountain--

KITTEN VAA: Mm-hmm.

AUDIENCE: --then the water would go slower.

KITTEN VAA: Then the water would go slower. Do you agree or disagree?

AUDIENCE: Agree.

KITTEN VAA: Can you tell me more.

AUDIENCE: Because when we did the experiment with Earth materials and we used sand, it went slower than soil, like pebbles.

AUDIENCE: Kind of want to add one. Yeah, I want to add on to James. I agree with-- it is very compact. And it has little tiny spaces in between for the water to go through. But I really think that sand went the slowest because sand has the most littlest things in it.

JESSICA THOMPSON: This video looks at a whole unit of instruction and how teachers can support scientific argumentation inside of modeling at the beginning, middle, and end of a unit and how we support kids when agreeing and disagreeing with one another.

[MUSIC PLAYING]

KITTEN VAA: We started with drawing our initial models and talking about our own ideas and personal experiences about what we think caused the town to flood.

At the beginning of the unit, the students are presented with the phenomena. And they're given a model to be thinking about how and why the town had flooded. And so as a teacher, I'm listening to students' ideas, listening to their own language that they're bringing.

AUDIENCE: His idea was that [INAUDIBLE] was going through the ground. And then there was like a layer of stone over here. And then the water kept on rising up.

Our model is that maybe the dam exploded because there's such a powerful water current.

KITTEN VAA: Their initial models don't necessarily have a lot of writing. So it's important that you're listening to the students' ideas.

[MUSIC PLAYING]

Yesterday, you shared your initial ideas of what you think might be happening that's causing the flood for the town of Moncton. And so I have three claims that I want to share with you. And I want you to think about them to yourself on whether you agree or whether you would like to make any changes or if you like them just the way they are. So one of the claims we have is it says, we claim that the water filled up behind the dam and went up the hill and then down to the town. And so I have made copies of the models that showed that idea.

Once I had seen those patterns, we presented the claims and asked students to see if they agreed or disagreed with those claims, if they wanted to make any revisions, and had their models where we felt it represented those claims.

So she was saying this model should be over here.

AUDIENCE: Yeah.

KITTEN VAA: Are you agreeing with that? So this model was in the wrong section.

JENNIFER RICHARDS: I think there are a few considerations that are important in selecting key claims at the beginning of a unit. That's to anchor modeling and really explaining a phenomenon. The first step that Kitten engaged in was really looking at the range of student models when they first initially thought about what caused the town of Moncton to flood. And so she was trying to select out what are some of the ideas she's seeing across models that were common, that were familiar to students, and that also represented a range of perspectives that they'd be able to pursue together over time.

[MUSIC PLAYING]

Kids come in with a range of really productive and sensible ideas and experiences from their lives. Even young students are coming in with a wealth of experiences. And those are what are particularly generative for supporting their sense making.

KITTEN VAA: Share your idea again. And I want everyone to think about where does this idea go, this personal experience. So hold on, put your hands down. And share that story one more time.

AUDIENCE: So me and Andrew were using those tools. And we pushed the water off the concrete. And so then it soaked inside the soil.

KITTEN VAA: So this is an idea that would agree and support this claim. We might have some that you would disagree and have some kind of experience that would say that can't happen.

[MUSIC PLAYING]

So we use the claim T charts to collect evidence and thinking about the evidence that we are using, whether it proves or disproves that claim. Then as students build their knowledge, they started using other pieces of evidence in the experiments that they've done, the videos that we were watching, the texts that we were reading. And so building that over time, students became more confident in their science ideas. Some students changed their science ideas because of those experiences.

We're going to be shopping for evidence today. And you're going to be thinking about these two claims on whether they help support or disprove these ideas.

JESSICA THOMPSON: They make claims at the beginning of a unit. And then they constantly revise them over time. And they're mounting evidence and weighing evidence throughout the entire unit. But it's all done within the drawing of a scientific model. And they're constantly revisiting and drawing what they can see and what they can't see happening.

[MUSIC PLAYING]

KITTEN VAA: Tell me your claim again.

AUDIENCE: If the glacier left mostly sand and some rocks in the mountain, then the water would go slower to the town because sand collects the water when the water passes by.

KITTEN VAA: Do you agree with that? So the next step is I want you to be thinking about evidence. We've been talking about evidence. And so how do we know that? So I know this because.

What I'm hearing you say is that because they're so close together, that it's slowing it down too-- so making it go slower. Is there an example where we saw that because it wasn't so close together that it went faster? Was there a different material that--

AUDIENCE: Well, I think it was with the pebbles.

KITTEN VAA: So we can look to see too, right. So was the--

AUDIENCE: The pebble [INAUDIBLE] The clay was 100.

KITTEN VAA: Did that take longer or shorter amount of time?

AUDIENCE: Longer.

KITTEN VAA: Yeah.

JESSICA THOMPSON: They're using modeling and argumentation together. And in that way, these practices co-develop, where they to get better at scientific modeling and drawing what they can see and what they can't see along with developing much richer scientific claims over time.

[MUSIC PLAYING]

KITTEN VAA: We do a lot of thinking about how scientists is not just usually one person and that is is a group of people working together as a community. And so we spend a lot of time at the beginning of the year talking about what does that look like and what does that sound like. It's not quick at all. Yeah, it takes time. So what are you hearing Jamie saying?

AUDIENCE: I heard Jamie say that he thought that the sand was going to-- I actually can't remember now.

KITTEN VAA: So what can you do?

AUDIENCE: Can you please repeat it, Jamie?

I agree with Nick's idea because the sand is more packed together than the pebbles, there aren't as many holes in the sand.

And I agree with that idea.

KITTEN VAA: I feel like they've changed in, having the confidence of being able to share their thinking and agreeing and disagreeing comfortably. I see them now challenging each other and thinking about the ideas that they share and asking really good questions or clarifying, what do they mean by that?

I want to thank you for sharing and taking a stand today. And we'll continue thinking more-- yes. And we'll continue thinking more about what's causing this. So nice job today. Thank you.

[APPLAUSE]

[MUSIC PLAYING]