Explicit Teaching in Problem-based Mathematics
Put the Success in Criteria and Learning Goals

[MUSIC]

NARRATOR 1: Put the success in criteria and learning goals.

NARRATOR 2: Success: when individual students meaningfully understand the language and context of goals and supporting criteria in ways that enable them to move their learning forward, self-assess, and define next steps. The language, concepts, and skills described by the criteria are best understood when students can draw on knowledge from prior and/or new experiences. Criteria may surface in the consolidation of a problem-based task or be built and refined over a series of lessons as students construct and grow conceptual and procedural understandings.

BRENDA KRESS: Our learning goal was to compare the relationship between area and perimeter. So after the students had the opportunity to test that out, what we noticed--this was the criteria that emerged from their learning. Students will test that out and I'll wander around to observe if the criteria that emerged has consolidated. The most interesting concept is that even though the area stays the same the more sides that are exposed of the tiles the greater perimeter is born.

STUDENT 1: This is gonna be one long shape.

BRENDA KRESS: What do you know about the square?

STUDENT 2: That--

They're all bunched up in group.

BRENDA KRESS: Okay, but what about when they're all bunched up in group?

STUDENT 1: Less of their sides are showing so less sides equal less perimeter.

BRENDA KRESS: Interesting to see that when we were doing our activity on the board with the perimeter of 12 they noticed that there was a smaller perimeter when students had a bow-like figure so they're bale to notice that and realize that they have to move so hence the name Square Blasters. They can't have any squares in their figure 'cause that won't be the greatest perimeter.

ALLISON BRESCHT: Our lessons over the last two days have exposed the learning that most students understand based on how we decompose and recompose the tiles the perimeter will change. This can happen in a number of ways. What we found out is when we expose more sides the perimeter increases and a further generalisation of when we hide more sides that the perimeter then decreases.

[MUSIC]

STUDENT 3: Okay, so we should probably write down--

ALLISON BRESCHT: So, Katie, could you explain what you mean by that because you wrote something really interesting here I'm curious about.

KATIE: Okay, so what I wrote was we can decrease the amount of exposed sides to make the perimeter greater because we rearranged and added tiles.

STUDENT 4: The area is now 7 and the perimeter is 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.

12.

KATIE: 12 units.

ALLISON BRESCHT: Isn't that interesting? 'Cause I think a lot of people often think that when we add more blocks everything's gonna increase but you found a way to use a strategy from one of our generalisations and you made that perimeter decrease.

KATIE: It's really interesting.

ALLISON BRESCHT: Pretty neat.