

“Singular”, “Scattered”, and “Stacked”



#2400767: Investigating Novel Math Tasks to Engage in Conceptual Talk with Multilingual Learners

Linking and Transforming Dot Plots

Theory predicts and talk confirms three approaches.



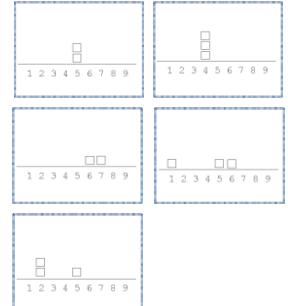
Link beyond	“The total is 13.”
Link within	“It’s separated.”
Transform	“I can make it into 6,7.”

Students hybridize pure types.

“Because all of these are stacked on top of each other ...

... and these are like scattered ...

... and this one has both of them.”



Ideas Iterate in Interaction

As new plots emerge, so do new ideas and categories.

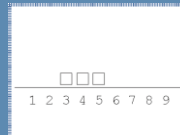
Luis: “like it’s one singular plot...”



Karina: “Yeah. There’s only, there’s four boxes on top of only the number 4. And there’s no other boxes on any other numbers.”

Karina: “I don’t think that goes together with another thing. It’s like back to back.”

Luis: “And these are like really close.”

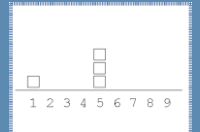


Karina: “Two boxes on top of 2 and a box on top of 5.”

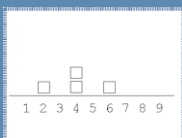
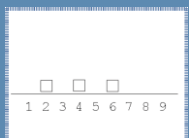


I wouldn’t think it would go with any of them.”

Luis: “It’s the same thing, just one is plotted and five is plotted three times.”



Karina: “It’s the same plot but the boxes are on top of.. There’s a box on top of 2, 4, and 6.”



Luis: “Yeah. And the only difference that this one is plotted one more. Like on the 4.”

I believe I would go with was is this one. Because like, it is like one singular one and then it has a distance and right here also shows it and then it has like, like more than two stacked.”

Karina: “I agree...”

Methods

Video

Gesture

- Developed real-time cognitive interviews
- Interviewed multilingual students
- Analyzed talk and thinking with content, speech, and gesture analysis

Challenge Overcome

Concepts

Too avant garde:

- decodable codes
- points at infinity

More familiar:

- proportionality
- similarity
- slope



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