

## Belief and Reflection Probes

These measures gather data on students' perceptions of their ability to solve a problem, providing insight to how their metacognition changes throughout the problem-solving process.

### Purpose

- The probes attend to two different facets of metacognitive evaluations:
  - Reflection: how students' plans for solving have changed
  - Belief: how confident a student is in their ability to solve a problem

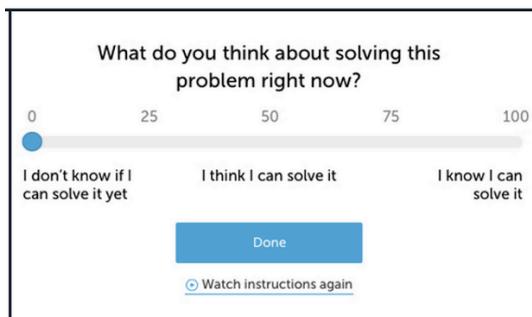
### Measure Details

- These probes are embedded within a mathematics learning platform while students are solving problems, and they appear at intervals based on their activity in the platform.
- The reflection probe is treated as a discrete variable with 3 different categories.



The reflection probe interface is a rectangular box with a white background. At the top, the text "Think about your plan. What did you do?" is centered. Below this, there are three blue rectangular buttons stacked vertically. The top button is labeled "Used original plan". The middle button is labeled "Thought about changing plan, but didn't". The bottom button is labeled "Changed plan". At the bottom of the box, there is a small blue button labeled "Watch instructions again".

- The belief probe is on a continuous scale from 0 to 100 with higher values indicating higher belief in the ability to solve the problem.



The belief probe interface is a rectangular box with a white background. At the top, the text "What do you think about solving this problem right now?" is centered. Below this, there is a horizontal slider scale with numerical markers at 0, 25, 50, 75, and 100. A blue dot on the slider indicates the current belief level. Below the scale, there are three text labels: "I don't know if I can solve it yet" (left), "I think I can solve it" (center), and "I know I can solve it" (right). At the bottom of the box, there is a blue button labeled "Done" and a small blue button labeled "Watch instructions again".

## Accessing the Measure

- For permissions and clarifying questions, please contact:
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