Metacognition in Learning Elementary Probability and Statistics
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ABSTRACT

This study used qualitative research methods to identify metacognitive thoughts adult students had while learning elementary probability and statistics concepts and while problem solving, alone and with other students. From the 49 students observed in a classroom setting, seven were purposefully selected to be interviewed outside the classroom three times: a review of the student's notes taken during a class immediately preceding the interview, the student solving a problem alone, and a group of three or four students solving a problem together.

Classroom observation notes were organized according to categories of metacognitive thinking--orientation, organization, execution, and verification--and a fifth category labeled "lack of metacognition." Interviews were recorded, transcribed, and coded according to the same categories. During data analysis four themes found in the literature emerged from the data: novice vs. expert problem solving, statistics as a viable subject, self-reporting, and a cognitive-metacognitive framework.

The interviewed students could be classified into two groups by similar characteristics regarding the themes. It was found that students can earn above-average grades using limited or no metacognition, but those who provided evidence of cognitive awareness and self-monitoring were better able to report an understanding of probability and statistics concepts.