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Differential Metacognitive Activation in Intuitive versus Reflective Thinking in Classroom Assessment Test

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Abstract

This study investigates metacognitive awareness among students, focusing particularly on 'subjective confidence' as a predictor of potential conceptual change. In our study, 132 eighth graders completed a basic number knowledge test and evaluated their confidence level for each answer. Our analysis revealed that metacognitive accuracy—the alignment of confidence levels with actual performance—was significantly related to academic achievement scores in the 'Two-Numbers Comparison' task (e.g., choosing the correct inequality such as '1/2 > 1/3' or '1/2 < 1/3'), but not in the 'Number Approximations' task (e.g., choosing the closest result to '21/10 + 60/31' from options such as 2, 4, 41, or 81). Additionally, we observed distinct behavioral patterns in response times: the 'Two-Numbers Comparison' task elicited rapid responses, whereas the 'Number Approximations' task resulted in slower, more reflective responses. In conclusion, our results indicate that metacognitive processes are more actively engaged during intuitive thinking compared to reflective thinking.