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The Effects of Self-Explanation and Practice on Strategy Use

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Abstract: The effect of self-explanation was evaluated against an alternative way to spend the same amount of time: completing additional practice. Self-Explanation was compared against an Additional Practice and a Same Practice condition. Problem solving strategy use and explanation quality within mathematical equivalence were investigated. Seventy-five second through fourth grade students received an instructional intervention on solving mathematical equivalence problems (i.e. $2 + 4 + 5 = _ + 5$), while being asked to self-explain six items, complete twelve items, or only complete six items. Both self-explanation and additional practice increased procedural learning, but self-explanation resulted in increased procedural transfer at post and retention test. Self-explain students adapted the most flexible strategy sooner than the non-explain groups. High quality explanations were correlated with conceptual knowledge at retention test. Microgenetic analyses of strategy use are discussed. Findings highlight the role of prompting for self-explanation in strategy discovery.