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Unique and Additive Effects of Self-Explaining and Contrasting Cases on Learning Fraction Division

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Abstract: Studies show that both contrasting cases and self-explanation are useful in promoting procedural and conceptual knowledge when learning from worked examples. It is not clear whether these instructional tools draw on similar problem-solving skills or provide unique support for learning. The purpose of this study is to assess whether self-explanation and contrasting cases are more effective when combined than when applied separately. To the extent that these processes can be manipulated separately, we hypothesize that the effects of both instructional techniques are unique, and together will lead to greater knowledge gains.

Participants completed a pretest, assessing their ability to divide fractions, before engaging in a problem study session and procedural lesson about fraction division. Participants then completed the posttest, which included procedural and conceptual transfer measures. Pilot data suggest that there are differences between the benefits of self-explanation and contrasting cases on procedural and conceptual learning.