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Carr, Martha; Taasoobshirazi, Gita; Stroud, Rena; Royer, James M.

Combined fluency and cognitive strategies instruction improves mathematics achievement in early elementary school.

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Summary: One hundred and seventy-eight second grade students from two states (Georgia and Massachusetts) participated in an experiment in which they were randomly assigned to either (1) a computer program designed to increase fluency in addition and subtraction, (2) a program designed to improve cognitive strategy use for addition and subtraction, (3) a program that combined the fluency and cognitive strategy instruction programs or (4) a control condition. The intervention consisted of 40 half-hour sessions (2 sessions per week for 20 weeks). Prior to the intervention, and immediately following the intervention, the participants were tested on fluency, cognitive strategy use, and mathematics achievement. ANCOVAs indicated that children in the combined fluency and cognitive strategy use condition significantly improved their mathematics achievement in comparison to the control group. When we examined the impact of the intervention as a function of gender, boys appeared to benefit from the intervention, but girls did not.

Classification: D42 F32 C32

Keywords: fluency in addition and subtraction; cognitive strategy; intervention; instructional strategies; achievement

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