

ZMATH 2016e.00244

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Schema-based instruction: effects of experienced and novice teacher implementers on seventh grade students' proportional problem solving.

Learn. Instr. 44, 53-64 (2016).

Summary: This study examined the effects of a research-based intervention, schema-based instruction (SBI), implemented by experienced- (taught SBI in previous study [A. K. Jitendra et al., "Effects of a research-based mathematics intervention to improve seventh-grade students' proportional problem solving: a cluster randomized trial", J. Educ. Psychol. 107, No. 4, 1019–1034 (2015; doi:10.1037/edu0000039)] and novice-teacher implementers (taught SBI for the first time with professional development) on the mathematics outcomes of seventh-grade students. SBI is a multicomponent intervention that emphasizes the mathematical structure of problems through the use of schematic diagrams and incorporates problem solving and metacognitive strategy instruction. Results indicated that both experienced- and novice-teacher implementers delivered SBI with similar levels of fidelity; there was no SBI experience effect on the immediate and 10-week retention tests of proportional problem-solving, on a general measure of problem solving, or on the end of the year state mathematics achievement test. These results provide evidence that the effectiveness of SBI generalizes over time to different cohorts of teachers and that the impact of SBI on student mathematics outcomes is maintained over time without additional PD.

Classification: C73 D43 D53 F83

Keywords: schema-based instruction; experienced and novice implementers; seventh-grade students; proportional problem solving

doi:10.1016/j.learninstruc.2016.03.001