ZMATH 2016f.00315

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Elementary mathematics teachers' judgment accuracy and calibration accuracy: do they predict students' mathematics achievement outcomes?

Learn. Instr. 45, 49-60 (2016).

Summary: In this study we investigated whether elementary mathematics teachers' knowledge of their students, as reflected in both the accuracy and confidence with which they are able to estimate their students' task-specific performance on sets of mathematics problems, predicted students' overall mathematics achievement. Thirty-nine teachers made predictions about the performance of a random sample of target students ($n = 150$) in their classrooms on sets of "easy" and "difficult" multiplication and division problems. Teachers also provided confidence ratings for those judgments. From these data, indicators of teachers' judgment accuracy, judgment confidence and calibration accuracy (a measure of metacognitive monitoring) were then related to all of their students' ($n = 834$) performance on year-end standardized mathematics achievement tests. Multilevel analyses indicate that teachers' calibration accuracy, but not their task-specific judgment accuracy, significantly predicted students' mathematics achievement. Implications for future research on teacher knowledge as well as professional development programs are discussed.

Classification: C49 D40 D60 C70 C30 D50
Keywords: teacher knowledge; judgment accuracy; instructional decision-making; metacognitive monitoring; student achievement
doi:10.1016/j.learninstruc.2016.06.008