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The effect of content knowledge and pedagogical content knowledge on instructional quality and student achievement.

Kunter, Mareike (ed.) et al., Cognitive activation in the mathematics classroom and professional competence of teachers. Results from the COACTIV Project. New York, NY: Springer (ISBN 978-1-4614-5148-8/hbk; 978-1-4614-5149-5/ebook). Mathematics Teacher Education 8, 175-205 (2013).

Summary: This chapter presents the findings of analyses testing whether and to what extent mathematics teachers' content knowledge and pedagogical content knowledge systematically impact the quality of their instruction and, in turn, their students' learning progress. Analyses based on a representative sample of grade 10 classes and their mathematics teachers showed that teachers' pedagogical content knowledge was theoretically and empirically distinguishable from their content knowledge. Multilevel structural equation models revealed a substantial positive effect of pedagogical content knowledge on students' learning gains that was mediated by the provision of cognitive activation and individual learning support.

Classification: C49 B50 C70

Keywords: content knowledge; pedagogical content knowledge; achievement; professional competence; mathematical knowledge for teaching; classroom instruction

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