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**Prospective middle-school mathematics teachers' knowledge of equations and inequalities.**

Cai, Jinfa (ed.) et al., Early algebraization. A global dialogue from multiple perspectives. Berlin: Springer (ISBN 978-3-642-17734-7/hbk; 978-3-642-17735-4/ebook). Advances in Mathematics Education, 379-408 (2011).

Summary: This chapter describes an investigation into the algebra content knowledge, in relation to elementary equations and inequalities, of 328 US teacher-education students who were seeking endorsement to become specialist middle-school mathematics teachers. Most of these prospective teachers had done well in high school mathematics and were taking their last algebra course before becoming fully qualified teachers of mathematics. After reviewing the scant literature on the teaching and learning of quadratic equations, and of linear inequalities, we summarize a pencil-and-paper instrument, developed specifically for the study, which included linear and non-linear equations and inequalities. The students were also asked to comment, in writing, on a “quadratic equation scenario” that featured four common errors in relation to quadratic equations. Data analysis revealed that hardly any of the 328 students knew as much about elementary equations or inequalities as might reasonably have been expected. Brief details of a successful intervention program aimed at improving the pre-service teachers' knowledge, skills and concepts relating to quadratic equations and inequalities are given, and implications of the findings for mathematics teacher education and, more generally, for the teaching and learning of algebra, are discussed.

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